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NOTICE TO READERS.

This journal is devoted to the advancement of PHARMACEUTICAL KNOWLEDGE and to the advocation of a MORE THOROUGH EDUCATION and PRACTICAL TRAINING for all persons engaged in PREPARING and DISPENSING medicines, drugs and chemicals.

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THE AMERICAN
JOURNAL OF PHARMACY.

NOVEMBER, 1886.

MEMOIR OF PETER WILLIAMSON.

Read before the Philadelphia College of Pharmacy, at a Stated Meeting, September 27, 1886.

Peter Williamson, one of the original members associated in founding the Philadelphia College of Pharmacy, deceased at his residence on Pine street, in this city, on the 6th of March, 1886, in the ninety-first year of his age.

The parents of Peter—Jesse and Mary Williamson—came to Philadelphia from Bucks county, his father pursuing the occupation of a carpenter and builder. He deceased in 1853, leaving what was then considered as a large estate, as evidence of his success in business. He was a member of the religious society of Friends, and highly esteemed.

Peter Williamson was born in Philadelphia, September 6, 1795, receiving his education at a Friends' seminary. He was led by inclination to learn the business of a druggist, and engaged with John W. Bryant, whose store was located at Second and Pine streets.

At the early age of eighteen years he entered into partnership with Dr. Joseph Klapp, whose store was at the northeast corner of Second and Almond streets. Dr. Klapp had an extended practice in his profession, and Peter a natural adaptation for the dispensing business. The firm of Klapp & Williamson soon became prosperous, and continued for many years the leading retail drug store in the old district of Southwark. Dr. Klapp retired from the firm in 1828, and the business was continued by Mr. Williamson. Adding to his large retail trade the specialty of medical supplies for shipping, and a manufacturing and jobbing trade, the demand for a larger store and increased facilities induced him in 1836 to erect the store at 710 South Second street and the dwelling adjoining.

In 1845 he associated with him in business his son Jesse Williamson, Jr., under the firm name of Peter Williamson & Son. After

the decease of his father (in 1853) Peter retired from the firm. His son Jesse deceased in 1854, and the business was purchased by Mr. James L. Bispham, who continues it at the old stand.

The connection of Mr. Williamson with this college dated from its first inception. He acted as secretary to the meeting of druggists which assembled in Carpenter's Hall, February 21, 1825, and was a member of the committee then appointed to report upon the subject of instruction of druggists in the science connected with their profession.

This committee having reported adversely to the acceptance of the proposition made by the trustees of the University of Pennsylvania, and recommending the establishment of a school of instruction entirely devoted to the requirements of druggists, the Philadelphia College of Pharmacy was the outgrowth, and was incorporated by the Legislature of the State, in March, 1822. Mr. Williamson does not appear from the record to have taken an active participation in the affairs of the college, his name appearing but once among the officers—as first vice president, to succeed Prof. Procter, who deceased in February, 1874. After holding this position one year he resigned on account of his age and entire withdrawal from active participation in business and scientific pursuits. Notwithstanding this seeming inactivity, it was well known that he was deeply interested in the prosperity of the college, which was evidenced by his presence at the meetings, and the annual commencements.

In March, 1874, he founded the first scholarship in the college, conveying to the trustees the sum of $500, the annual income from which was to afford tuition to a worthy applicant of means insufficient to bear the expenses of the college course. A number of young men now actively engaged in the pharmaceutical business will remember with gratitude the forethought and liberality which has enabled them to commence business with a capital—in the form of knowledge—which they would not have otherwise possessed.

In private life Mr. Williamson was highly esteemed by all of his acquaintance; his genial manner and social disposition attached to him a large circle of friends. For many years he was an active member of the Masonic order, and held the positions of Grand Treasurer and Grand Master of the order in the State of Pennsylvania. He was an active member of the old Volunteer Fire Department, and for many years President of the Hope Hose Company.

He was one of the founders of the Southwark Dispensary, and active in many good and charitable works. For twenty years he was Rector's Warden of Trinity P. E. Church, Southwark, and one of its corporate members. The consistent Christian life of Mr. Williamson extended beyond the period usually allotted to man. Venerable in years, and in the duties of a long life, his record will remain with us as an enduring monument to his memory.

LIQUOR MAGNESII BROMIDI.

By Joseph W. England, Ph.G.

(Read at the Pharmaceutical Meeting, October 19th.)

Under this name an aqueous solution of magnesium bromide has originated, and been employed in the Philadelphia Hospital, more particularly in the insane department of that institution, with such success as to warrant its more general trial and employment. Drs. Henry, DaCosta and Brooke, of this city, have each employed it in insane practice, and found it to be a decided sedative in its action upon the nervous system, having no unpleasant after effects and evincing, in a number of instances, a cathartic action. As the subject may be a matter of pharmaceutical interest and inquiry in the future, I desire to communicate to you the formula I originated, which is as follows:—

Take of

Acid. Hydrobromic. Dilut. (U. S. P., 1880), 1 pint.

Magnes. Carb. 9.5, to neutralize (or about one troy-ounce).

Filter.

Each teaspoonful contains 7 (exactly 6.97) grains of anhydrous magnesium bromide. Dose: One to two fluidrachms.

A sample of the solution as thus prepared, is here presented. You will observe that it is a clear, transparent, light-yellowish liquid; odorless, bitter, and brackish in taste. Specific gravity 1·122, miscible with alcohol in equal volumes without precipitation, and remaining unaltered upon exposure to air. One fluidounce of the solution, precipitated with a slight excess of sodium carbonate, and then ignited, should yield not less than 12 grains of magnesium oxide (corresponding to at least 55·76 grains of magnesium bromide).

The chemical reaction upon which this process is based, is as follows:

$$10HBr + 4MgCO_3.MgH_2O_2.5H_2O = 5MgBr_2 + 11H_2O + 4CO_2$$
808 484 918 198 176

Now as each fluidounce of water weighs 455.66 grains, the same volume of dilute hydrobromic acid of the pharmacopœia, having a specific gravity of 1·077, should weigh 490.75 grains; and as the solution contains 10 per cent. of absolute acid, one fluidounce then contains 49.075 grains of available HBr.

Then if 808 parts of anhydrous HBr, as shown in the equation above, yield, on neutralization with magnesium carbonate, 918 parts of magnesium bromide, 49.075 parts of anhydrous HBr should give 55·76 parts of magnesium bromide (or exactly 6·97 grains to each fluidrachm).

If 808 parts of anhydrous HBr require for neutralization 484 grains of officinal carbonate of magnesium, then 49.075 parts should require less or 29·4 parts (or 1 pint of officinal hydrobromic acid would require 470·4 grains of officinal magnesium carbonate).

The usefulness of magnesium bromide, in its acceptability and decisive action, seems to reside in the fact that it contains a larger percentage of combined bromine than any other bromide, with the exception of the lithium compound, as the following table of percentages of combined bromine, in various bromides, will show:

	Formula	Mol. Wt.	Per Cent.
Nickel bromide	$NiBr_2 3H_2O$	271·6	58·76
Potassium "	KBr.	118.8	67.17
Zinc "	$ZnBr_2$	224·5	71·09
Iron "	$FeBr_2$	215	74·23
Sodium "	$NaBr$	102·8	77·62
Calcium "	$CaBr_2$	199·6	79·95
Ammonium bromide	NH_4Br	97·8	81·59
Magnesium "	$MgBr_2$	183·6	86·92
Lithium "	$LiBr$	86·8	91.93

The main advantage of preparing the solution by this method over others, is the constancy in strength of the resulting product, arising from the fact that pure hydrobromic acid of pharmacopœial strength is readily obtainable. The difficulty of making magnesium bromide by granulation and preparing the solution direct, is that on evaporation of the solution, a grayish, pasty mass is left, excessively hygroscopic in nature, which, on continued application of heat to induce thorough dryness, is, according to Balard, who gives the hydrated compound the formula $MgBr_2 6H_2O$, decomposed into HBr and

MgO. Serullas found, on the other hand, that the anhydrous salt was fusible at red heat without decomposition; while Löwig discovered on distilling the aqueous solution that HBr was given off.

Another consideration in favor of the first method is the cost, which is one-half less than when prepared by direct solution of the granulated bromide. The impracticability of preparing it by double decomposition between magnesium sulphate and calcium bromide may here be mentioned and resides in the difficulty of obtaining a product of constant strength, through the variable quantity of water of crystallization in the one, and absorbed moisture in the other. The high cost of metallic magnesium effectually precludes the utilization of direct combination of the elements.

PRACTICAL NOTES FROM VARIOUS SOURCES.

By the Editor.

Sodium rhodanate has been found by Dr. Paschkis (Schmidt's Jahrbücher, April, 1886), to have an action similar to that of strychnine, but less rapid, producing in frogs prolonged tetanic convulsions with inhibition of the respiratory and cardiac movements. Injected into the arteries of mammals, a marked increase in the blood pressure is produced.

The salt referred to is the *sulphocyanide, sulphocyanate* or *thiocyanate* of sodium, and is prepared by neutralizing thiocyanic acid with sodium carbonate, evaporating the liquid carefully by the aid of a water bath or over sulphuric acid, and recrystallizing the dry residue from alcohol. The salt forms white or colorless rhombohedric crystals, which are very deliquescent and freely soluble in water and in alcohol. Its composition is expressed by the formula NaSCN. The aqueous solution does not produce any precipitate with baryum chloride; it imparts to ferric salts a deep blood-red color which is not affected by hydrochloric acid, but disappears on the addition of corrosive sublimate.

Potassium sulphocynate is more generally met with than the sodium salt, and may probably have the same, or at least an analogous action. As early as 1818, A. Vogel (*Schweigger's Journal*, xxiii), called attention to the poisonous narcotic effects of the potassium salt.

Bromide of Arsenic is given by Dr. Davis to diabetics in doses of

from three to five drops, the diet being strictly regulated at the same time. Under this treatment the sugar disappears rapidly from the urine; but it is recommended that the administration of the remedy be afterward continued for several weeks. (*Jour. Amer. Med. Asso.*, May.) Dr. Moock (*France Méd.*, Feb. 1886), has used this arsenic preparation with success in similar cases. Notices of this solution will be found in AMER. JOUR. PHAR., 1883, pp. 143 and 225.

Salicylate of iron is given by Dr. Braithwaite (*Brit. Med. Jour.*, July 17, 1886), in infantile diarrhœa accompanied by fetid stools. The solution of the salt is prepared extemporaneously by dissolving separately in water 20 grains each of ferrous sulphate and sodium salicylate, mixing the solutions, adding 3 or 4 drachms of glycerin, and diluting with water to 3 fluidounces. This is given in hourly doses of a teaspoonful until the stools become black, when the same dose is repeated every three or four hours.

Calcium Santonate is prepared, according to Heldt, by digesting calcium hydrate with santonin in alcoholic solution, until the red color has disppeared, evaporating the filtrate at a moderate temperature, exhausting the dry residue with water and concentrating. The salt forms white satiny crystalline crusts, is permanent in the air and sunlight, has an alkaline taste and reaction, and is soluble in water and in alcohol. The compound has recently been recommended as possessing anthelmintic properties without being absorbed in the digestive tract. The dose is 1 grain.

Calcium hippurate is highly recommended by Poulet in the uric acid diathesis, and is stated to be useful in scrophulous complaints, incipient cirrhosis of the liver and in struma. The dose is 10 grains. For the preparation of the salt, Liebig recommended the aqueous solution of hippuric acid to be heated with calcium carbonate; the filtrate yields on concentration, glossy scales or oblique rhombic prisms, which have the composition $Ca(C_9H_8NO_3)_2.3H_2O$, are soluble in 18 parts of cold and 6 parts of boiling water, and lose at 100° C., the water of crystallization amounting to 12 per cent.

Dr. Dujardin-Beaumetz (*Union Méd.*, August, 1866), orders the salt extemporaneously prepared by dissolving 1 part of hippuric acid in 25 parts of lime water and adding an equal bulk of syrup; the dose is a tablespoonful.

Sal Alembroth or *ammonio-mercuric chloride* is now largely used by Sir Joseph Lister for dressings, the solution used for rendering ban-

dages, lint, etc., aseptic being prepared of 1 part of the double salt to 100 parts of water, colored by a little aniline blue, 1 in 10,000, the latter becoming reddish on coming in contact with an alkaline discharge.

From the accounts published in medical journals the pure double salt seems to be used, prepared by sublimation. This has the composition $NH_4Cl.HgCl_2$, and may be obtained by subliming a mixture in molecular weights of ammonium chloride, 53·4, and mercuric chloride, 270·5. Davy found that the sublimate usually contains a little calomel and hydrochloric acid from partial decomposition. When the mixture of the two salts is crystallized from water, the double salt is obtained either anhydrous in rhombohedrons, or in long silky needles containing $1H_2O$. Lister's solution, however, can be readily made from the salts by dissolving 21 grains of ammonium chloride and 100 grains of mercuric chloride in 12,100 grains (27⅝ oz. av., or 26⅝ fluidounces, U. S. measure), and adding 1¼ grains aniline blue.

The British Pharmacopœia directs a *liquor hydrargyri perchloridi* prepared from 10 grains each of mercuric chloride and ammonium chloride, and 1 Imperial pint—8750 grains of distilled water. This solution contains the *Sal alembroth* of the alchymists; but when this is evaporated and the dry residue is heated, the sublimate is not of uniform composition, since the ammonio-mercuric chloride volatilizes at a temperature much higher than those at which ammonium chloride or mercuric chloride sublime. The double salt $(NH_4Cl)_2.HgCl_2$, is decomposed by heating it to sublimation and the sublimate is not of uniform composition.

Narceine has been successfully employed by Dr. Brown-Séquard (*Gaz. hebd. de méd. et de chir.*), in doses of ½ to 1 grain, as an expectorant in bronchitis accompanied by profuse viscid expectoration.

The spontaneous transformation of morphine into apomorphine is reported in the *Brit. Med. Jour.*, June 26, 1886. A solution of morphine hydrochlorate, which had been employed subcutaneously, eleven months later, was found to be violently emetic, and was ascertained to contain apomorphine. Such solutions should be kept on hand only for a few weeks.

A case of Cocaine poisoning, causing deafness and loss of vision, motion and sensation, was rapidly relieved by Dr. Schilling, through the inhalation of nitrate of amyl. (*Centralbl. f. d. ges. Ther.*, Feb. 1886.)

Antipyrine appears to be a valuable hæmostatic, and according to Chéron (*Revue des mal. d. femmes*) to be preferable to iron solutions and to ergot as a local application in uterine hæmorrhages, a 4 per cent. solution being usually of sufficient strength.

Atropine santonate is recommended by Bombelon for its non-irritating mydriatic action, 1 drop of a 1:200 solution producing dilatation of the pupil, lasting for nearly twenty-four hours.

Antineuralgic liniment. Guéneau de Mussy recommends for this purpose a mixture of oil of peppermint 4 parts, tincture of aconite root 2 parts and chloroform 1 part.

Wilkinson's Ointment, according to Hager, contains *Beguin's spiritus sulphuris*, prepared from washed sulphur 1 part and stronger ammonia 6 to 8 parts with sufficient sulphuretted hydrogen gas until solution is effected. The ointment is a mixture of Beguin's liquor 1 part, prepared chalk two parts, and flowers of sulphur, lard and liquid tar of each 25 parts.

A modified formula has been used with advantage by Dr. Behrend in the Berlin Hospital for skin diseases, and is as follows: sublimed sulphur 8, liquid tar 8, soft soap 16, lanolin 16, and powdered pumice 5 parts.

Preparation of lanolin. F. Fialkowski (*Wiad. Farmac.*) recommends soaking sheep's wool in cold water for 24 hours, and afterward washing it well until the water remains clear. The wool is then boiled twice with water and pressed while hot, when the lanolin is obtained of a whitish color, much lighter than the commercial article. Twelve pounds of wool yielded 18 ounces of lanolin, or about 11 per cent.

A disinfecting powder, recommended by Sigmund (*Phar. Zeitung*), for the dressing of sloughing wounds and syphilitic ulcers, consists of beech tar or oil of cade 10 to 15 parts, powdered gypsum 100 parts.

Luminous paper has been prepared by incorporating paper pulp with 20 or 25 per cent. of phosphorescent powder, and adding a little gelatin.

Potassium permanganate has been found very serviceable by Züboff (*N. Y. Med. Jour.*, Oct. 2, 1886), as a local application for frostbite, a solution of 1 or 2 grains to the ounce of water being used; it relieves pain, allays inflammation and prevents suppuration in blisters. For burns a half-grain has been employed.

LABORATORY NOTES.

(Abstracts from Theses.)

Officinal extracts.—Francis J. Lammer, Jr., prepared the following extracts according to the directions of the *U. S. Pharmacopœia*, and determined the percentage yield of the finished products.

Extr. Aconiti	12·766 per cent.	Extr. Haematoxyli	5.3 per cent.
" Aloes aquosum	91·54 "	" Hyoscyami alcoh.	16·64 "
" Arnicæ radicis	19·53 "	" Iridis	8·9 "
" Belladonnæ alcoh.	32·23 "	" Juglandis	16·82 "
" Cannabis indicæ	16·56 "	" Krameriæ	8·4 "
" Cinchonæ	26·4 "	" Leptandræ	15·97 "
" Colchici radicis	23·2 "	" Malti	44·72 "
" Colchici seminis*	9·63 "	" Mezerei	7·1 "
" Colocynthidis	15·135 "	" Nucis vomicæ	6.17 "
" " comp.†	95·77 "	" Opii	49·6 "
" Conii alcohol	10·73 "	" Physostigmatis	6·2 "
" Digitalis	25·5 "	" Podophylli	8.31 "
" Euonymi	18·31 "	" Quassiæ	2·24 "
" Gentianæ	44·6 "	" Rhei	25·66 "
" Glycyrrhizæ purum	25·32 "	" Stramonii	14·02 "
		" Taraxaci	11.3 "

Cerates and Ointments.—Jas. E. Buckley, Ph.G., suggests that the composition of ointments should be so regulated, that their fusing points be merely a little higher than the temperature of the body, both in health and disease. The following fusing points were ascertained by introducing the preparation into a glass tube of one-eighth-inch bore, suspending this with a thermometer in water, and applying heat until the plug changed its position in the tube; and by heating the preparation in a cup placed in a water-bath, and stirring with a thermometer until entirely liquefied, the fluid point was determined. The preparations were all made strictly in accordance with the *U. S. Pharmacopœia* of 1880. The results were as follows, the temperature being given in degrees Centigrade:

---

*Menstruum same as for the corresponding fluid extract.

† Loss in powdering 4.23 per cent.

	Fused.	Fld.	Congealed
Ceratum	56·6	60	55·5
" Camphoræ	57·7	62·7	53·8
" Cantharidis	61·1	71·2	54 4
" Cetacei	57·7	61·1	54·4
" Extr. Canthar.	70	72·1	61·2
" Plumbi subacet.	60	62·2	54·4
" Resinæ	51·1	54·4	48·8
" Sabinæ	52·7	53·5	51·6
Unguentum	52·9	53·9	51·1
" Acidi Carbol.	51·9	54·4	59
" " Gallici	34·4	40·5	23·9
" " Tann	34·4	38·3	23·8
" Aquæ Rosæ	51·1	54·4	48·8
" Belladonnæ	34·4	38·8	23·8
" Chrysarob	34·4	38·8	23·8
" Diachylon	51·6	58·6	44·4
" Gallæ	34·4	40·5	23·8

	Fused.	Fld.	Congealed
Ung. Hydrargyri	45·0	51·6	44.4 / 29·4
" Hydrar. amm.	33·8	38·8	23·8
" " nitrat.	47·2	50	31·1
" " oxid. fl.	52·7	60	46·6
" " " rub.	50·5	54·4	42·2
" Iodi	33·8	37·7	23·3
" Iodiformi	35·5	39·4	23·8
" Mezerei	50	52·2	48·3
" Picis liq.	41·6	47·2	40·6
" Plumbi carb.	33·8	40	23·8
" " iod.	33·8	40	23·8
" Potas. iod.	42·2	44·4	31·1
" Stramonii	41·1	44·3	28·3
" Sulphuris	45·5	50·5	28·3
" Sulph. alkal.	38·8	49·4	26·1
" Veratrinæ	39·4	46·5	34·4
" Zinci oxid.	40	44·2	34·4

Ointment of Boroglyceride.—Clarence E. Downes, Ph.G., states such an ointment is made in the Jefferson Hospital by heating one part of boroglyceride, containing 50 per cent. of boric acid, and while hot, adding it slowly to three parts of petrolatum, the stirring being continued until the mixture has thoroughly cooled, in order to avoid separation of the ingredients. The ointment is a very convenient vehicle for atropine, physostigmine, chloride of zinc and other remedies.

Unguentum Zinci Oxidi.—Jos. P. Williams, Ph.G., recommends a somewhat firmer ointment than the officinal. It is made by triturating 5 oz. of oxide of zinc with 4 oz. of glycerin until a smooth paste is obtained. Then melt 1 oz. of white wax, add gradually 15 oz. of benzoinated lard, keeping the temperature near 140° F.; now stir until the mixture begins to thicken, add the zinc oxide prepared as before, and continue the stirring until thoroughly mixed and perfectly smooth.

Troches.—After experimenting with various excipients for troches, Ellsworth S. Adams, Ph.G., observes that currant paste deserves to be more frequently used, and that a jelly prepared from starch and gum arabic furnishes one of the best general excipients. Powdered gum arabic and starch, of each 1 oz., are well mixed, triturated with 3 fluidounces of water, and the mixture heated to boiling until solution has been effected.

A lozenge useful in diarrhœa was prepared from powdered opium

12 grains, tannin 50 grains, aromatic powder 250 grains, and sufficient of the starch excipient, the mass divided into 12 lozenges.

Pepsin and Bismuth.—With the view of testing the asserted incompatibility of pepsin and bismuth salts, Harry K. Kroh, Ph.G., made a number of experiments regarding the digestive action of pepsin in the presence of bismuth salts. The ammonio-citrate of bismuth is unsuited for preparing clear solutions with pepsin. Bismuth subnitrate was found to somewhat retard, but not otherwise interfere with, the digestion of albumen in the presence of hydrochloric acid, added in the usual proportions. Mixtures of 1 pepsin, 10 bismuth subnitrate, 50 hard-boiled albumen, 500 water and 8 hydrochloric acid left only 3 parts of the albumen undissolved at the time when, in the control experiment without bismuth salt, the albumen had been completely dissolved. The best method of administering the two remedies is in the form of mixtures, using the subnitrate of bismuth and directing the mixture to be shaken.

Cinchonidine Sulphate.—Seven samples of this salt were examined by Thos. J. Backes, Ph.G., and found to be pure, except one, which left 6·6 per cent. of ash, consisting of magnesium compound. The loss of water by exsiccation at 100° C., varied between 8·2 and 11 per cent.

Honey.—Chas. S. Commings, Ph. G., states that honey gathered from white clover, basswood and raspberry is of a light color and has a delicious flavor; but the bees will not gather it from white clover as long as it can be gotten from other plants. Considerable honey is also found in the blossoms of fruit trees, of the maple, locust and other plants. Buckwheat honey is considered inferior, it being darker in color and less agreeable in flavor than that procured from many other plants.

Honey may be kept from crystallizing or candying by suspending the vessel containing it in water, applying heat, and stirring the honey constantly, until the water is heated to the boiling point, when the vessel is taken from the fire, the scum removed, and, after cooling, the honey is placed in jars or other suitable vessels, tightly covered and kept in a cool cellar. Treated in this manner, Mr. Commings has kept honey from twelve to sixteen months without crystallizing.

Menthol Pencils cannot be made with the addition of thymol, chloral or camphor, all of which cause the menthol to liquefy at ordinary temperatures, producing, even on the addition of an equal bulk of spermaceti, a mass too soft for compression into a definite

shape. Some of the commercial menthol pencils consist of pure menthol, melt at 44° C., are freely and completely soluble in hot alcohol, chloroform, ether, carbon bisulphide and oil of peppermint, and on being gently heated are completely volatilized. Wm. G. Nebig, Ph. G., has found the pencils of three manufacturers to be always of this behavior, and to consist of pure menthol.

The product of four other manufacturers contained between 30·5 and 69·25 per cent. of paraffin, began to melt between 39° and 41°C., and was completely liquefied at from 43° to 59° C. These cones were soluble in benzin, benzol, carbon bisulphide, chloroform and fixed oils; also in boiling alcohol, a white mass being deposited on cooling.

The cones from another manufacturer, No. 8, after having been repeatedly treated with hot chloroform, left behind a white crystalline powder, which was inodorous, very bitter, of neutral reaction, soluble in water and alcohol, and with strong sulphuric acid turned blood-red, showing it to be salicin, amounting to 37 per cent.

Occasionally the cones of the last five manufacturers were found to consist of pure or nearly pure menthol; this is attributed to the low melting point of menthol, and to the difficulty of uniformly mixing large amounts of it with the other substances, owing to the volatility of the former.

Fuchsin was recommended by H. Zeise (see Am. Jour. Phar., 1867, p. 320) as a test for the presence of alcohol in certain volatile oils. Jas. P. Mallon, Ph. G., has examined the behavior of aniline red to the volatile oils of bergamot, cajeput, caraway, cinnamon, citronella, cloves, coriander, cubeb, juniper, lavender, lemon, myrcia, neroli, pennyroyal, peppermint and sassafras, and found it to be soluble in all the oils named in sufficient quantity to communicate its color. The oil of peppermint had been recently distilled and was known to be pure; it was freed from water by treatment with calcium chloride and rectification, when it was not colored by aniline red, but in about twenty minutes this was seen to become soluble in the presence of 1 per cent. of alcohol; in the presence of 5 per cent. or more of alcohol the oil at once became pink and rapidly of a deeper color.

The effect of dehydration and rectification was not tried with the other oils mentioned above. It may be noted here that Zeise found the oils of cubeb and sassafras, among several others, to be unaffected by fuchsin, and that these and other oils tested had been prepared by himself.

A NEW PROCESS FOR THE PRODUCTION OF THE ALKALINE METALS.

By Hamilton Y. Castner, of New York.

Abstract of a paper read before the Chemical Section of the Franklin Institute, October 12, 1886, communicated by the author.

The process which I employ consists in reducing either the hydrate or carbonate of an alkali, when in a fused state, at moderate temperatures, by the use of the carbide of a metal or its equivalent, whereby an excess of carbon is avoided and the use of lime is rendered unnecessary. The reducing substance, due to its composition and gravity, remains below the surface, and is therefore in direct contact with the fused alkali. By the equivalent of the carbide of a metal, I mean a mechanical compound of carbon and metal from which the metal cannot be separated, excepting by the aid of acids or intense heat. Such a compound I produce by coking a mixture of tar and iron (previously reduced in a fine state of division, by carbonic oxide or hydrogen). From experience, such proportions of tar and iron are used, as will produce, when the mixture is coked, a heavy mass of metallic coke, having about the composition of iron seventy per cent. and carbon thirty per cent, equivalent to the formula FeC_2. This mechanical compound, after being ground, is ready for use and consists of fine particles of iron coated with carbon, fully answering the purposes of a true carbide. I prefer to use caustic soda in the preparation of sodium on account of its fusibility, and with it mix such quantity of the so-called "carbide," that the carbon contained in the mixture shall not be in excess of the amount theoretically required to reduce all the soda to sodium, according to the following reaction:

$$3\,NaHO + FeC_2 = 3Na + Fe + CO + CO_2 + 3\,H,$$

or to every 100 pounds of pure caustic soda, fifteen pounds of "carbide," containing about twenty-two pounds of carbon, is added. The treatment of this mixture is carried on in large cast-iron crucibles in a furnace, the general arrangement of which are as follows: The heating space of the furnace is divided into separate chambers, the dimensions of the same depending upon the size of the crucibles to be heated, and the number of these compartments are in proportion to the capacity of production desired for the furnace. An aperture is provided in the bottom of each chamber, through which the crucible may be raised by mechanical means into its position in the furnace.

The necessary cover for the crucible is fixed stationary in each chamber, and from this cover projects the tube to the outside of the furnace into the receptacle for the condensation of the metallic vapors. When operating, the crucibles are charged with the mixture, made as before described, placed upon the lift, which is situated directly below the aperture made in the bottom of the chamber, and raised into the furnace. The edges of the covers are made convex, while the edges of the crucibles are concave, so that when the crucibles are raised the edges come together and, being held from below, form a tight joint, preventing the exit of gas and vapor, excepting through the tube provided from the cover. Gas, which is used as a fuel in connection with heated air, is allowed to enter the chamber, after the crucible containing the charge is in place, and the reduction and distillation commences as soon as the crucible contents have reached the temperature of 1000° C., the sodium being reduced in the crucible and distilled therefrom into the condenser, by passing through the tube projecting from the crucible cover. As soon as the operation is finished, the crucible is lowered and a new one, containing a fresh charge is raised in its place, while the crucible just removed is cooled, cleaned and recharged. The appliances, which hold the cover in place, are so arranged that the cover may be removed whenever necessary without interrupting the process, which is practically continuous. By avoiding the careful mixing and calcining of ingredients preparatory to charging the cylinders, and in carrying out generally the mechanical part of the old process, the details of which require the most careful management, the method just described will be seen to have many advantages. As the charge is fused, the alkali and reducing material are in direct contact, and this fact, together with the aid rendered the carbon by the fine iron, in withdrawing the oxygen from the soda, fully explains the chemical reasons why the reduction is accomplished at a moderate temperature. Furthermore by reducing the metal from a fused mass, in which the reducing agent remains in suspension, the operation can be carried on in crucibles of large diameter, the reduction taking place at the edges of the mass, where the heat is greatest and the charge flowing thereto from the centre to take the place of that reduced. By the old process, the heat required to penetrate to the centre of the refractory charge and reduce the soda there situated in addition to the heat absolutely needful to bring about reduction, necessitates the use of wrought-iron vessels, and even when

these are made small in diameter, which partially removes this great disadvantage of the method, the expensive cylinders are rapidly rendered worthless from the effects of the intense heat.

In doing away with the use of lime and an excess of carbon, the main causes which have hitherto prevented a full yield of metal are removed, and thus, with the aid of other advantages described, I am enabled to obtain fully ninety per cent. of metal instead of thirty per cent., as formerly. By the old process lime must be added to prevent fusion, to insure any reduction; yet, at the same time it forms, with a portion of the soda, the compound known as soda-lime, and from this substance carbon reduces sodium only at the most intense heat. In practice, according to the old method, four pounds of carbon are used to every nine pounds of sodium carbonate. This is twice the amount theoretically required to reduce all the sodium, even assuming the gas resulting from the reduction to be wholly carbonic-oxide. When, however, but one-third the total amount of sodium is all that is obtained from a charge, the proportion between the sodium produced and carbon used becomes as one is to six. The effect of an excess of carbon in the mixture, which, as previously explained, is really necessary, is to produce an excessive amount of carbonic-oxide, and this, together with the excess of carbon, combines with the metallic vapors of sodium, forming various compounds, from which the metal cannot be distilled. By reducing caustic-soda with the carbide of a metal, or its equivalent, and using only sufficient carbon to carry out the reaction stated above, the gases given off consist of hydrogen, carbonic-oxide and carbonic-acid, which mixture has little or no effect upon the vapors of sodium. The crucibles, after treatment, contain a small amount of carbonate of soda and all the iron of the "carbide" still in a fine state of division, together with a very small percentage of carbon. These residues in the crucibles are treated with warm water, and the solution of soda evaporated to recover the carbonate of soda, while the fine iron is dried, mixed with tar and coked to produce more of the so-called "carbide equivalent."

Boric Acid has been found by Dr. J. L. Minor, of Memphis, Tenn. (*N. Y. Med. Jour.* July 31, 1886), to be an efficient remedy, though not a specific, in granular lids. The powder is applied to the affected parts by means of a camel's hair brush from three times a week to three times a day, the difference depending upon both the individual and the disease.

GERMANIUM AND ITS COMPOUNDS.

Translated from *Chemiker-Zeitung*, 1886, No. 69, Page 1058,

By Geo. H. Ochse, Ph.G.

Germanium.—Most of the salts of germanium are very soluble, hence, solutions of these salts do not yield precipitates with reagents, or the precipitates when formed are dissolved by washing with water. By fusing the mineral (Argyrodite) with sulphur and carbonate of sodium, throwing into water and decomposing the resulting solution with acid, nothing but sulphur was obtained, whilst the filtrate when treated with sulphuretted hydrogen or other reagents, did not yield a precipitate. It was afterwards discovered that the germanium remained in solution with sodium sulphide, but was precipitated when the acid was added largely in excess. To free it from the accompanying sulphur the precipitate was treated with diluted ammonia, which dissolved the germanium sulphide together with traces of arsenic and antimony; by gradually adding hydrochloric acid, antimony and arsenic sulphides were precipitated in the order named, and by adding more acid to the filtrate snow-white sulphide of germanium was obtained. There is now no doubt but that germanium is the ekasilicium of Mendelejeff.

Argyrodite has a metallic lustre; when broken it is of a reddish color, becoming violet by age; opaque; hardness 2·5, sp. gr. 6·085 at 15° C., brittle, crystalline system monoclinic. When heated in glass tubes it yields a black sublimate resembling sulphide of mercury very much; by continuing the heat it fuses. The composition of argyrodite is as follows:—

Ag 74·72 per cent., Ge 6·93 per cent., S 17·13 per cent., Fe 0·66 per cent., Zn 0·22 per cent., Hg 0·31 per cent.

The effect produced by heating the mineral in a current of hydrogen is very characteristic, sulphuretted hydrogen being evolved and a dark glossy mirror of crystalline sulphide of germanium being formed, accompanied by a reddish-brown, pulverulent, amorphous sulphide of germanium, the residue consisting mainly of metallic silver. The process for obtaining germanium is as follows: Argyrodite is fused with an equal weight of a mixture of calcined soda and flowers of sulphur, the fused mass treated with water and the solution neutralized with sulphuric acid, which precipitates the sulphur together with the sulphides of antimony and arsenic; the filtrate is treated with

more acid to precipitate the sulphide of germanium. The precipitated sulphide of germanium is washed with dilute sulphydric acid, heated with concentrated nitric acid to form oxide, and reduced at a red-heat in a current of hydrogen. To reduce larger quantities, it is best to knead the oxide with from 10 to 15 per cent. of starch and boiling water to a paste, and moderately heating in a closed crucible. By this process germanium is obtained as a dark-gray powder. With borax it fuses into a regulus, fusing point = 600° C. It crystallizes readily, is very brittle, readily pulverized and breaks with a scaly fracture. Germanium has a bright metallic lustre, a greyish-white color, sp. gr. 5·469, is not affected by hydrochloric acid, but dissolves readily in nitro-hydrochloric acid. Nitric acid converts it into a white oxide, and by heating with concentrated sulphuric acid, sulphuretted hydrogen is evolved, a white sulphate, soluble in water, remaining. Concentrated solution of caustic potash does not affect it; with nitrates and chlorates deflagrating mixtures are formed. The atomic weight was obtained according to J. Volhard's method from the tetrachloride and found to be 72·32, corresponding with the results of Lecoq de Boisbaudran, who used another method, and states it to be 72·28. The vapor density of the chloride ($GeCl_4$), according to L. F. Nilson and O. Pettersson, in Stockholm, at 301·5°=7·43, and at 739° =7·44. Gustav Kobb found the spectrum to be very distinct and measureable; 1 line in orange, 1 in yellow, 4 in violet, and 12 in green and blue.

Combinations of Germanium.—Two oxides, 2 sulphides, 2 chlorides and 1 iodide are known. They do not color the flame of a Bunsen burner, nor do they yield a spectral reaction. Solutions of germanium salts are decomposed by many water-reducing metals, especially zinc, germanium being precipitated. Most compounds of germanium are easily reduced by means of reducing agents at a high temperature.

Oxides of Germanium.—Compact germanium retains its lustre when exposed to the air; at a red-heat it becomes coated with a thin layer of oxide, whilst powdered germanium when slightly heated begins to form oxide. Germanium protoxide is formed by decomposing the chloride ($GeCl_2$) with alkalies; the resulting hydrated oxide heated moderately in a current of carbonic acid, yields the gray-black monoxide. This is insoluble in dilute sulphuric acid, but dissolves readily in hydrochloric acid to form germanous chloride. This solution shows a characteristic reaction, and is an energetic reducing

agent; it converts chromic acid into chromium oxide, hypermanganic acid into manganous oxide, and precipitates gold solutions brown; from bichloride of mercury solutions it throws down first calomel then mercury, and bleaches litmus instantly.

Germanium dioxide (Germanic acid?), GeO_2, is formed by burning the element in oxygen, or by oxidation with nitric acid, or by roasting the sulphide. The pure oxide can be obtained by decomposing germanic chloride ($GeCl_4$) with water, but the yield is trifling. Germanic oxide is a dense white powder of specific gravity 4·703. One part of the oxide requires for solution at 20° C. 247·1 parts, at 100° C., 95·3 parts of water. The solution, when evaporated, yields small microscopic crystals. Carbon or hydrogen reduces it to germanium. Germanic oxide is sparingly soluble in acids, and possesses the characteristics of an acid, which accounts for the solubility in alkalies.

Sulphides of germanium are readily formed by passing vapors of sulphur over germanium at a red heat. Germanous sulphide, GeS, is formed by heating the disulphide with an excess of germanium in a current of carbonic acid. Germanic sulphide, when heated in a slow current of hydrogen, yields beautiful crystals. In close proximity to the heated portion, beautiful thin scales or feathery crystals, having a lustre resembling iodide of iron, are formed. Held up to the light, they are transparent with a bright-red or yellowish color, and form a brown-red powder when pulverized. When heated it fuses and volatilizes; heated in the air, it is converted into oxide. Solution of caustic potash dissolves it readily; hydrochloric acid precipitates amorphous, reddish-brown or orange sulphide; hot concentrated hydrochloric acid converts it into germanous chloride ($GeCl_2$). The crystalline sulphide is insoluble, the amorphous sulphide soluble, in sulphide of ammonium forming disulphide. Germanic sulphide (GeS_2) is prepared by precipitating a solution of germanic oxide with sulphuretted hydrogen, or by treating its sulpho-salts with an excess of acid, whereby a voluminous white precipitate is obtained; it is washed with dilute acid and saturated with H_2S. The acid is removed by washing with alcohol saturated with H_2S, then with ether, and drying in vacuo. Germanic sulphide is quite soluble in water; the aqueous solution, however, soon decomposes, emitting H_2S. The dry disulphide soon decomposes when exposed to a moist atmosphere, and, as a consequence, has a hepatic odor. Germanic sulphide is a

sulpho-acid, the natural salt being argyrodite. Alkali sulphides form with it soluble sulpho-salts, from which solutions of the heavy metals seem to precipitate insoluble sulpho-germanates.

Chlorides of Germanium.—Compact germanium takes fire, burning with a blueish-white flame and forming vaporous tetrachloride when heated in chlorine gas. Powdered germanium burns spontaneously in chlorine. Germanous chloride ($GeCl_2$) is obtained by passing gaseous hydrochloric acid over powdered germanium or its sulphide. Germanium dichloride is a thin colorless liquid, fumes when exposed to the air; the vapor colors cork intensely red. The low boiling point (about 72° C.), *i. e.*, lower than the tetrachloride, might possibly be due to the formation of a germanium chloroform ($GeHCl_3$), similar to the silicium chloroform, instead of the dichloride. A little water causes a dense white precipitate of oxychloride to fall. Germanic chloride ($GeCl_4$) is obtained chemically pure by mixing one part of powdered germanium with eight parts of bichloride of mercury and distilling at a moderate heat. The tetrachloride is a thin, colorless liquid of specific gravity 1·887 at 10°C.; it does not solidify at —20° C., boils at 86° C., fumes when exposed to the air, and is decomposed by water.

Germanic Iodide (GeI_4) is obtained by decomposing the tetrachloride with potassium iodide, or by direct combination of the elements. It has an orange color, yellow when powdered, fuses at 144° C., seems to boil between 350 and 400° C., is very hygroscopic and gradually forms white oxide when mixed with water.

No distinct reaction for germanium has as yet been found. The best test is the formation of the white sulphide with ammonium sulphide in alkaline germanium solutions on adding a large quantity of acid. In the course of analysis it follows in the arsenic, antimony and tin group.

Use of Fluorides.—Dr. J. Lucas, of Bombay (*Lancet*, May 22, 1886), has employed fluoride of ammonium in the treatment of enlargement of the spleen. Nausea was produced at first, but afterward large doses could be borne, and after a time the appetite improved. The nauseant and purgative effects are greatly lessened by giving the drug after meals. He thinks it has antipyretic and antiperiodic properties, and that it is the best known remedy for enlargement of the spleen. He began with five-minim doses, but is disposed to give twenty or even thirty minims, well diluted. He suggests that fluoride of iron might be preferable on account of its hæmatinic properties.—*N. Y. Med. Jour.*, June 12, 1886.

SALVE PENCILS AND PASTE PENCILS.

By Dr. H. C. Brooke.

Dr. P. G. Unna describes two forms of application to the skin by means of salve pencils and paste pencils, which have the advantage of being more convenient and more economical than those ordinarily in use. The *salve pencils* (*Salbenstifte*) are based on the model of the ordinary lip-salve pencils, and may, when suitably medicated (with zinc oxide, tar, chrysarobin, etc.), be rubbed quickly into any limited dry eruption of the skin, which thus becomes covered with a coating of hard ointment. The paste pencils were made after the idea of the nitrate of silver sticks, and are intended for use in those cases in which the epidermis is broken or destroyed, as in eczema, chancre, or the various forms of ulcer; also in such cases as condylomata, where the horny layer is thin and fatless, or where the surface is moist, as is the case with the mouth, anus, conjunctiva and urethra. By moistening the pencil and stroking it over the surface of the lesion, a thin paste layer of the medicament is left behind.

The basis of the salve pencils is composed of olibanum, resin, olive oil, wax, in varying quantities according to the nature of the medicament, with the addition of a little colophonium to give greater adhesive power. The medicaments employed may, of course, be any of those ordinarily made use of in ointments. The basis of the paste pencils is made up of starch, dextrin and white sugar, mixed with a small quantity of tragacanth. I have found them somewhat hard and scratchy, and think that they might be made much more useful if of softer consistence, for the idea is undoubtedly a good one.

I have used "salve sticks" or "salve pencils" regularly for some months before the publication of Unna's paper, and have found them a very valuable aid in treating limited skin eruptions, whether they are simply rubbed into the skin to serve as an ordinary ointment or rubbed in and the layer thus formed then covered over with impermeable plaster.—*Med. Chronicle*, August, 1886.

In addition to the foregoing abstract of Dr. Unna's paper, which appeared in the *Monatshefte f. prakt. Dermat.*, April, 1886, we select from the forty formulas published in the latter journal, the following as examples:

Stilus acidi salicylici dilubilis:

	10 p. ct.	40 p. ct.
Precipitated salicylic acid	10 parts	40 p
Powdered tragacanth	5 "	5 "
Powdered starch	30 "	10 "
Powdered dextrin	35 "	25 "
Powdered white sugar	20 "	20 "

Stilus arsenico-sublimatus dilubilis:

Powdered arsenious acid	10 parts.
Corrosive sublimate	5 "
Powdered tragacanth	5 "
Powdered starch	30 "
Powdered dextrin	30 "
Powdered sugar	20 "

Stilus iodoformi dilubilis:

Iodoform	40 parts.
Powdered tragacanth	5 "
Powdered starch	10 "
Powdered dextrin	30 "
Powdered white sugar	15 "

Stilus ichthyoli dilubilis:

Sodium sulpho-ichthyolate	20 parts.
Powdered tragacanth	5 "
Powdered starch	30 "
Powdered dextrin	35 "
Powdered white sugar	10 "

Stilus saponatus kalinus dilubilis:

Anhydrous potash soap	60 parts.
Powdered white bole	40 "

Stilus acidi carbolici unguens:

	10 p. ct.	30 p. ct.
Carbolic acid	10 parts	30 p
Powdered olibanum	20 "	20 "
Yellow wax	40 "	50 "
Olive oil	30 "	— "

Stilus acidi borici unguens:

Boric acid	10 parts.
Yellow wax	40 "
Benzoinated olive oil	35 "
Colophony	5 "

Stilus cantharidini unguens:

Cantharidin	0·5 parts.
Colophony	10 "
Yellow wax	45 "
Benzoinated olive oil	45 "

Stilus creasoti:

Creasote	40 parts.
Powdered olibanum	20 "
Yellow wax	40 "

Stilus iodoformi unguens:

Iodoform	40 parts.
Colophony	5 "
Yellow wax	30 "
Olive oil	25 "

Stilus iodi unguens:

Pure iodine	20 parts.
Colophony	5 "
Yellow wax	40 "
Olive oil	35 "

Stilus plumbi oleatis et acidi salicylici unguens:

Precipitated salicylic acid	20 parts.
Lead plaster	40 "
Yellow wax	20 "
Olive oil	20 "

Stilus saponis, picis et ichthyoli unguens:

Anhydrous potash soap	10 parts.
Liquid tar	10 "
Sodium thioichthyolate	5 "
Colophony	5 "
Yellow wax	40 "
Benzoinated olive oil	30 "

Stilus zinci sulphocarbolatis unguens:

Sulphocarbolate of zinc	5 parts.
Powdered castile soap	15 "
Colophony	5 "
Yellow wax	40 "
Olive oil	35 "

AMERICAN MUSK.

By Charles Symes, Ph.D.

Read before the British Pharmaceutical Conference.

Some few years since several articles appeared in the Canadian and United States pharmaceutical journals, by Messrs. Christian and Gregory; these in turn were copied into European journals devoted to pharmacy, which created considerable interest in this substance. It was assumed that it would soon become an article of commerce and for many purposes replace the more expensive kind. With some little difficulty I obtained a supply, consisting of two thin, flexible, sheet-iron packages, each containing half a pound of the pods or follicles, of a flattened, oval shape, brown color, and smelling strongly of musk and rancid fat. (See also Amer. Jour. Phar., 1881, p. 397.)

The animal yielding "American musk" is known as the musk rat (*Fiber Zibethicus*), related to the beaver, is amphibious and abounds on the margins of rivers and lakes in the United States and Canada; it is trapped for its fur, and in directing attention to its musk follicles Mr. Christian was attempting to utilize a waste product.

Accompanying the supply which I obtained were the following particulars as to its mode of use:

"*For Toilet Soaps.*—Take one pound of the pods and bruise it with a portion of silex or glass, add four pints strong alcohol and 2 per cent. solution potash 6° B., and keep in a moderately warm place for three or four weeks. Such substances as civet, styrax, vanilla, benjamin; and such oil as cloves, caraway, serpolit and cassia are the usual additions to this musk in toilet soap, according to the kind wanted.

"*For Sachet Powder.*—Take one pound of the pods, place them in some convenient vessel with four pounds of powdered orris root (stirring occasionally) for two or three weeks, when the pods can be sieved out and used for tincture as above. The musk orris root can enter into musk, violet, and heliotrope sachets.

"*For Perfuming and Flavoring.*—Take one pound of the pod and mix with four pints strong alcohol, adding 2 ounces slaked lime to this quantity, and infuse about a month. For flavoring, the oils of rose, thyme, cloves, cinnamon and extract of vanilla are the usual accompaniments."

The sacs were found to be saturated with oil, and it became of in-

terest to determine whether the odorous principle resided in this or the tissues. Some portions were cut up and macerated several days in almond oil with occasional agitation, and on filtering it was found that the menstruum had taken up very little, if any, of the musk odor, whilst the rancid fatty smell was distinctly perceptible.

Ether dissolved out the oil, but carried with it some coloring matter and a little of the musk odor. A further quantity of 250 grains was cut up, laid between folds of stout, bibulous paper, and submitted to hydraulic pressure, when 25 per cent. of oil was readily separated; this, however, carried with it some brown extractive matter which possessed the musk odor, and it was evident that such a method could not be adopted in practice for separating the oil. It was subsequently found that bibulous paper with slight pressure possessed some advantages, and that this method was worth adoption.

Essence prepared with the use of calcium hydrate, as in the beforenamed formula, was partially freed from rancidity, but possesssed a peculiar pungency of its own, which seemed undesirable, and it readily became turbid, requiring to be filtered over and over again. In another experiment a little liquid ammonia was substituted for calcium hydrate, and that with decided advantage.

The sample marked "Essence two years old" was so prepared. In another bottle this essence is mixed with an equal quantity of lavender water, so that an opinion may be formed as to how far it is possible to use it in perfumery. It was found that if a small quantity only of ether were poured on the pods and poured off almost immediately, little of the musk odor was removed, and the pods were more readily acted on by the spirit with which they were subsequently treated; and further, that weak spirit dissolved less of the oil than strong spirit, but when rendered alkaline it took up quite as much of the musk odor. Reasoning on these and other facts, the following formula was deduced, and is, I believe, the most suitable for dealing with a somewhat unsatisfactory article.

Take 4 ounces of the pods, cut small and press gently between several folds of bibulous paper, wash lightly with about 2 ounces of methylated ether, pour off and allow the remaining ether to evaporate by a short exposure to the air; put into a wide-mouthed bottle with 15 ounces rectified spirit, 5 ounces distilled water, 20 minims liquid ammonia and ½ ounce powdered animal charcoal; allow all to stand with occasional agitation for one month, and filter through magnesia.

A sample of essence so prepared and a sample of soap perfumed with it are shown. The musk odor is there, but still a trace of the rancidity remains, and I am of opinion that the remedy is chiefly in the hands of the trappers of the animal or the collectors of the pods. The musk odor is, I believe, a distinct secretion, and when quite fresh much of the oil could be removed without materially impoverishing the perfume value of the follicles; thus more care could be expended on their preservation, so as to avoid this strong, rancid, greasy odor, for, until this is done, the American variety is not likely to make much way against genuine Tonquin musk.—*Phar. Jour. and Trans.*, Oct. 2, 1886, p. 282.

SALOL: A NEW ANTISEPTIC.

By John Moss, F. I. C., F. C. S.

Read before the British Pharmaceutical Conference.

A few notes on a new antiseptic of promise will no doubt interest the members of the Conference.

Our information on salol is derived chiefly from *La Semaine Médicale*, April 14th, 1886, which reports a meeting of the Medico-Pharmaceutical District Society of Berne, held in that city on the sixth of the same month. M. Sahli introduced salol as a new anti-rheumatic and antiseptic produced by Professor von Nencki, and as possessing certain very decided advantages over other bodies having allied therapeutic characters.

It is perhaps hardly correct to speak of salol as a new antiseptic. It is rather an association, a combination indeed, in which are concerned two well-known antiseptics, salicylic acid and phenol. It is somewhat startling to be told that phenol is an ether which is playing the *rôle* of a base, and that the compound is salicylate of phenol. We should be disposed to assume that M. Sahli's remarks on these points are misreported, and that salicylate of phenyl was intended, were it not that the word salol is evidently compounded of the initial and terminal letters of the former title.

Salol is a white crystalline coarse powder, rather like damp table salt. The odor is very marked, and is identical with that of oil of wintergreen, which is chiefly salicylate of methyl ($CH_3C_7H_5O_3$). When taken into the mouth, a fainter impression of the smell is received on the palate, and the taste of carbolic acid is just suggested. It is very

sparingly, if at all soluble in water at 60° F. It dissolves in proof spirit, more readily in stronger spirit, and is precipitated on dilution, a permanent emulsion being formed. The solution has no effect whatever on litmus.

Salol melts at 106° to 108° F., forming at a slightly higher temperature a clear white liquid like carbolic acid. If it be melted under water and shaken till cool, the original condition of a coarse crystalline powder is restored.

It dissolves readily in caustic soda solution, and on addition of acid in excess the liquid becomes milky, oily looking drops are visible, and the smell of carbolic acid is noticeable. When the liquid is only slightly acid, the addition of a nearly neutral solution of ferric chloride produces the purple coloration indicative of salicylic acid.

The advantages which are claimed for salol over salicylate of soda, for which it is proposed as a substitute, are dependent first of all on its insolubility in water and the juices of the stomach, and secondly on the ease and completeness with which it is decomposed after passing the pylorus. Being insoluble in water it is free from the repellant and nauseating effects of salicylate of soda which some patients find so objectionable that even syncope has sometimes supervened on ingestion. Passing through the stomach unaltered it undergoes decomposition in the duodenum, where it comes into contact with the pancreatic juice and is broken up into salicylic acid and phenol. Professor von Nencki claims that this change is due to the pancreatic ferment, but a simple experiment suffices to show that so highly organic a secretion is not essential to produce the effect referred to. The pancreatic juice is alkaline in character and I find that the addition of a few drops of solution of soda brings about the decomposition, so that the further addition of ferric chloride is followed by the characteristic purple coloration. The action of the soda takes place very slowly in the cold, more quickly when gently warmed. The liquid must be neutral or slightly acid for the color to be produced, though much acid discharges it. The best effect is obtained by digesting salol in solution of soda at 100° F. for an hour, pouring off the clear liquid, adding slight excess of hydrochloric acid and diluting, then adding a dilute solution of ferric chloride. No coloration whatever results when salol is heated with an acid instead of alkali previous to the addition of ferric chloride.

Now the salivary secretion also is alkaline and if alkali is the only

essential factor in the analysis of salol, it ought to happen that digestion with saliva should lead to the purple coloration with ferric chloride under the conditions already laid down, and this in fact is what occurs. The saliva is so slightly alkaline, however, that the amount of salol decomposed is correspondingly minute and the coloration very faint. The weak taste of salol is therefore accounted for.

Having passed the duodenum the salicylate and phenate of alkali, which are slowly produced as the gut is followed, are in condition to exercise their respective antiseptic powers, and to be absorbed into the circulation. They are voided as urate of salicyl and as sulphophenol.

So far as I know, the process of manufacture of salol has not been made public. I have tried to produce it by dissolving salicylic acid in excess of carbolic acid with the aid of a gentle heat, but have not succeeded in getting the whole of the salicylic acid so combined as not to give the purple coloration at once with ferric chloride. It seems not improbable that it should be formed by treating with hydrochloric acid at an earlier stage in the manufacture of salicylic acid. As you know, when the carbonic acid gas is brought into the presence of carbolate of sodium in the retort, a molecule of the former is absorbed with production of a molecule of salicylate of sodium, and a molecule of carbolic acid, which distils away. If the mixed salicylate of sodium and carbolic acid or, better, carbolate of sodium be treated with hydrochloric acid, the following equation would probably represent the decomposition:—

$$NaC_7H_5O_3+NaC_6H_5O+2HCl=$$
$$C_6H_5C_7H_5O_3+2NaCl+H_2O.$$

Chemically speaking, salol is salicylate of phenyl. The possibility that it is phenylsalicylic acid, of which the formula would be $HC_7H_4(C_6H_5)O_3$, is contra-indicated by its indifference to litmus, though the latter view receives support from the slow rate at which the compound is decomposed by soda, as well as from the observation that after the decomposition is effected the addition of hydrochloric acid, under ordinary conditions, is not followed by the re-formation of the original compound. I am aware that the latter fact apparently disposes of the suggestion just made as to the manufacture of salol, but it must be borne in mind that the effects of high temperature and pressure on two bodies set free in presence of each other cannot be disregarded.

Salicylate of phenyl contains 36 per cent. of phenyl, corresponding to 44 per cent. of carbolic acid. Sahli says that salol contains not

less than 38 per cent. of phenol; but seeing that his account did not concern itself chiefly with the chemistry of this new compound, a little latitude of expression is admissible.

Sahli claims that more carbolic acid may be ingested as salol without unpleasant secondary effects than in any other way. The dosage of salol being 30 grains three or four times a day, 12 grains of phenol are exhibited in every dose, and the freedom from irritation and other unpleasant local effects may be attributed to the slow rate at which salol is decomposed under the action of the intestinal juices.

For the present it remains only to state what are the various ailments in which Sahli has used salol with good effects. He has used it in all rheumatic affections, in chronic urticaria, in sub-orbital neuralgia, as an antipyretic, in diabetes, in intestinal catarrh, in typhoid fever, in cholera, against intestinal parasites, in catarrh of the bladder, in ozœna, in otorrhœa, as a local application in gonorrhœa, and as a mouth wash.

Since the above was written I have learned from Messrs. Kühn & Co., who represent the manufacturers in England, that the latter, Messrs. Durand and Huguenin, are not in a position to state how salol is made. The probability is that the process is entirely secret, and not the subject of a patent.—*Phar. Jour. and Trans.*, Oct. 2, 1886, p. 273.

TURMERIC ROOT, AND ITS COLORING MATTER.

By C. J. S. Thompson.

Turmeric root is still of interest to us, as it appears in the appendix of the last edition of the Pharmacopœia, for the preparation of the tincture, and paper, of turmeric.

Of the different varieties of the plant, which grow largely in moist districts of the East Indies, the *Curcuma longa* and *Curcuma rotunda* are perhaps the most useful. These are both the production of the same plant, the latter being the central rhizomes, and the former the elongated lateral ones.

The first is more especially used in the East, for its medicinal and aromatic properties; the latter being mostly employed for its coloring properties as a dye. They differ, however, very little in their composition.

The official rhizome, the *Curcuma longa*, is bent and knotty, being in pieces about the size of the little finger, and covered with a thin,

grey bark, on which there are slight rings; though that met with in commerce has usually a yellowish appearance, owing to the pieces of the root becoming rubbed one against the other.

Under the bark is a hard, heavy and compact substance of a deep orange-yellow color, the fracture resembling that of wax.

The root has the odor of ginger, and a warm, bitter and somewhat acrid taste, owing to its oil; it imparts to the saliva a yellow color.

The powdered root was formerly given medicinally as an excitant, and was reputed to act as a diuretic, the dose given in old Pharmacopœias being from twenty to forty grains. It is largely used in India and China in the arts as a dye, and also as an aromatic condiment, it being one of the ingredients in curry powder.

The root contains a small percentage of volatile oil, resin, brown extractive matter, starch and gum. The following represents the results of an analysis:—

Yellow volatile oil	1
Brown extractive matter	12
Resin	10
Gummy matter	13
Soluble matter in alkaline solution	57
Moisture, etc	7
	100

The root also contains from two to three per cent. of curcumin, $C_{14}H_{14}O_4$, a yellow coloring matter, which is soluble in oils, alcohol and fatty liquids, but very slightly so in cold water. It is easily dissolved in an alkaline solution, and turns a deep brown. Jackson and Menke (see Am. Jour. Phar., 1882, p. 398), who investigated curcumin very exhaustively, found it to be a diatomic monobasic acid. When treated with weak oxidizing agents it was found to yield vanillin. They succeeded in producing the following products from curcumin, by the action of nascent hydrogen, and of bromine: Curcumin dihydride, an anhydride of curcumin dihydride, tetrabromo curcumin, curcumin tetrabromide, and pentabromocurcumin dibromide.

The brown color given to turmeric paper by alkalies depends considerably on the strength of the alkaline solution employed.

Dilute acids will restore the paper to its original color.

The powdered root when treated with cold water yields to it a little of the coloring matter, enough to impart a dark yellow tint.

Hot water takes up a little more, although it does not dissolve the whole of the coloring principle.

Cold alcohol acquires a yellow color, and dissolves a quantity of the resinous matter, but hot alcohol dissolves out much more, and assumes a dark reddish-brown color.

If this alcoholic solution be evaporated, and the residue again acted on by ether, the ether will dissolve out the whole of the yellow coloring matter.

If the solutions are evaporated and dried, a resinous matter of a deep brown color will remain.

The simplest method of extracting curcumin is to macerate the powdered root in boiling water, until the liquid ceases to acquire any further tint. Then boil the residue in alcohol. The root is thus nearly exhausted, although the powder always remains more or less colored.

Mix the solutions, which should be of a reddish-brown color, and filter. The filtrate, on evaporation, yields a brown mass, which should be dissolved in ether, and again slowly evaporated, when the curcumin will remain in thin transparent layers.

When carefully dried, and reduced to a fine powder, it is of a rich yellow color, having the odor of vanilla. It melts at a temperature of 50° C., and even at ordinary temperature the powder, if fine, becomes soft and forms into a mass.

On exposure to sunlight it gradually loses its color and becomes nearly white. It burns with a bright flame. Curcumin is insoluble in water, but soluble in ether, chloroform and alcohol. Insoluble in dilute acids, but soluble in strong. With strong sulphuric acid it forms a solution of a crimson color, which disappears if water is added, and the curcumin is precipitated in yellow flakes. When treated with hydrochloric and phosphoric acid it acts in the same manner, but with acetic acid no change in color is produced.

On adding some boracic acid to an alcoholic solution and evaporating, it gives a beautiful crimson powder. With acetate of lead the solution gives a dark red precipitate, and with nitrate of lead a yellow precipitate. Nitric acid has a peculiar action on curcumin.

If one part of curcumin is mixed with 2 parts of nitric acid and same quantity of water, on the application of heat a rapid action takes place accompanied by a brisk ebullition. If still kept at a gentle

heat till the ebullition ceases, a resinous mass separates out which subsides, and a yellow soluble substance remains in the water.

The resinous substance when dried forms a fine yellow powder which is quite different from curcumin in composition and odor.

The yellow substance, which is soluble in water, crystallizes in transparent needles.—*Phar. Jour. and Trans.*, Aug. 14, 1886, p. 123.

THE DISCOVERY OF THE MYDRIATIC ACTION OF THE SOLANACEÆ.

By Dr. Rud. Kobert.

Professor of the History of Medicine and Pharmacology in Dorpat, Russia.

There can be no doubt that the discovery of the mydriatic action of certain Solanaceæ was a matter of great importance for therapeutic practice. Nevertheless, there exists a singular uncertainty, if not confusion, as to the time of this discovery and as to the discoverer himself. In fact, there is not a single book published in German, French, or English, in which I can find reliable data in regard to this matter.[1]

In order to mend this defect, I beg leave to gather for a historical discussion all pertinent material, which, as may be presumed, is no light task.

The Greeks and Romans understood by mydriasis a condition of visual weakness, together with a dilatation of the pupil. This definition can be found in Paulus Ægineta (iii., 22),[2] Celsus (vi., 6), and Isagoges; and is probably derived from the peculiar condition of visual weakness and pupillary dilatation invariably to be found in glaucoma. Some few authors, as Aëtius, designate improperly, also, other pathological conditions of the eye, such as phthisis bulbi, as mydriasis. In the presently accepted meaning—*i. e.*, dilatation of the

[1] The statements of A. Hirsch in the "History of Ophthalmology" (Graefe-Saemisch, "Text-book of Ophthalmology," vol. vii., p. 235) appearing to be more trustworthy than those of other authors, have been adopted in the main in this paper.

[2] This interesting passage is rendered by Adams as follows: When the pupil does not appear changed in color, but much wider than natural, and when it sometimes wholly impairs the vision, and sometimes nearly so, and when every object appears smaller, the affection is called mydriasis. The cause of it is some redundant humor.

pupils[1]—the word appears to have been first used by Cælius Aurelianus ("Chron.," ii., p. 344).

The first mention of a mydriasis produced by preparations of Solanaceæ[2] we find in Galen's third volume of "Methodus Medendi" (Edit. Kühn, tom. x., Lipsiæ, 1825, p. 171). This author states, in the second chapter of the quoted volume, that grave visual interferences and mydriasis may result by a too intensive local application of drugs containing mandragora or hyoscyamus. Dioscorides and Plinius Secundus do not appear to have known anything of this action, at least these writers never mention it, while mydriasis itself occurs in Pliny, who even mentions an artificial production of mydriasis by the seeds of anagallis. Galen, therefore, is unquestionably the first author who refers to the mydriatic action of two species of Solanaceæ. Still, his in every way correct statement appears to have been wholly forgotten, for no subsequent writer ever speaks of this action, which fifteen hundred years later had to be discovered anew.[3]

In 1686, Dr. Ray, a famous English physician, reported in his "Historia Plantarum" (vol. i., p. 680) that a lady coming under his observation had placed upon a small ulcer beneath the eye a belladonna leaf, and had afterwards been annoyed by an excessive dilatation of the pupil. Simultaneously the lady lost entirely the power of the pupil to react on light. The physician regarded this defect at first as a matter of accident, until a repetition of the belladonna application taught him that a dilatation of the pupil and loss of reactive power for several days were the physiological effects of belladonna.

But this second discovery also was again forgotten, although Ray's work was largely read. Thus Boerhave (1668–1738), however familiar with medical literature, says in his book, "De Morbis Nervorum" (p. 371), expressively that the juice of belladonna had no influence upon the eye, while Van Swieten, in his commentary of Boerhave's "Aphor-

[1] The word pupil, with its present signification, was used by Cicero ("De Natura Deorum," ii., 57), who derived it from pupula, a little doll.

[2] The identification of the Solanaceæ of the ancients is a difficult and as yet but partially solved problem, *vide* Sprengel ("Ped. Dioscorides de Mat. Med.," Lipsiæ, 1829, pp. 602–605), Francis Adams ("Paulus Ægineta," London, 1847, ii., pp. 218–219, and iii., p. 290), and Imbert Gourbeyre ("Recherches sur les Solanums des Anciens," Paris, 1884). For our purposes it is of importance to know that all of the species in question have a mydriatic action.

[3] Ebn, Baithar, and Paulus Ægineta, know positively nothing of this action.

isms" (vol. iii., p. 363), quotes Ray's case. And quite independently of Ray's observation, Evers reported in the *Berliner Sammlung*, 1773, vol. v., p. 565,[1] that he noticed in six persons hebetudo oculorum and dilatatio pupillæ as symptoms of the belladonna intoxication. Evers must accordingly be mentioned as the third discoverer of the mydriatic power of belladonna. Three years later the following case of poisoning occurred at Hamburg. A physician of repute, Dr. Reimarus, had ordered in a drug store belladonna. The nephew of the apothecary, Johannes Andreas Daries ("De Atropa Belladonna," Dissert. Inaug. Auctore Petro Joanne Andrea Daries. Lipsiæ, 1776. Reprinted in Ballinger's "Sylloge," vol. ii., p. 58), who prepared the prescription from the fresh plant, had a drop of the juice of the berries, or of the herb, accidentally get into his right eye. Very soon after this accident he was troubled by mydriasis and considerable visual interferences. Reimarus, informed by letter of the druggist's trouble, wrote that he was aware that the ingestion of large quantities of belladonna produced mydriasis, but that he was surprised to learn that the external application of the drug could likewise produce this result. This was, however, Reimarus added, a very interesting matter, and invited decidedly to therapeutic trials of the drug in cataract operations. But even before the arrival of this letter, Daries ascertained, by experiments on a cat, that the fresh juice of the herb and of the berries of belladonna had actually a mydriatic power. Hence Daries is to be designated as the fourth discoverer of the mydriatic action of belladonna.

About the same time, or a little later, Doederlein[2] observed in his practice a case recalling that one of Ray mentioned above. A patient having placed a leaf of datura stramonium upon an ulcer near the eye was soon affected with a complete paralysis of the pupil. Doederlein interpreted this mydriasis very correctly as the action of stramonium, and is accordingly to be regarded as the fifth discoverer of this

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[1] Gmelin states in his "General History of Vegetable Poisons" (Nuremberg, 1777), p. 301, that already in 1765 he had noticed mydriasis as one of the symptoms of belladonna-poisoning, but he does not appear to regard this symptom as characteristic, but rather as an incidental one, for, in reviewing all symptoms, he omits this one.

[2] Conrad Moench, "Lehre von den Arzneimitteln," Marburg, 1795, p. 357. Moench, by the way, was quite familiar with the publications of Ray and Daries.

action. Independently of him, Schiferli,[1] following the example of his preceptor Loder, who appears to have found the belladonna action for himself, used and recommended in 1796 an infusion of belladonna for cataract extraction. Loder is consequently the sixth discoverer of this action.

After this time the specific action of belladonna upon the eye became generally known in Germany and other countries.

Thus we find it mentioned as something generally known in Trommsdorff's "Pharmacological Dictionary" (Hamburg and Leipzig, 1802, vol. i., p. 299). The action of hyoscyamus was discovered by Himly, in 1800, from botanical deductions, and was warmly recommended for ophthalmological purposes.[2] Ehlers,[3] one of his pupils, translated the publication of Himly in question into French, but, either on purpose or by mistake, always wrote belladonna instead of hyoscyamus, inducing thus the French physicians to employ belladonna therapeutically. In the second French edition, however, appearing 1803 in Altona, the word jusquiame is used instead of belladonna. In England Paget[4] recommended the belladonna application for cataract extraction.

In lay circles, however, the mydriatic action of the Solanaceæ was in the beginning of this century still wholly unknown, and was anew discovered by Runge, the discoverer of the aniline colors. This chemist makes, in his "Chemischeh Briefen,"[5] the following interesting communication:—

"In Jena I became soon acquainted with Döbereiner, and discussed with him my researches about vegetable poisons, especially the Solanaceæ. Döbereiner appeared pleased with the methods instituted by me and the results of my investigations; he constantly stimulated me

[1] Rud. Abraham Schiferli, "Dissertatio de Cataracta," Jenæ, 1796; and "Theoretical Practical Treatise on Cataract," Jena and Leipzig, 1797, p. 85. He was military surgeon, later professor of surgery, and died as such in Bern in 1837.

[2] "Ophthalmolog. Beobachtungen und Untersuchungen," Bremen, vol. i., p, 1.

[3] "De la Paralysie de l'Iris occasionée par Application locale de la Belladone, et de son Utilité dans le Traitement de divers Maladies des Yeux," par Himly. trad. par Emil August Ehlers, Paris, 1802.

[4] *London Med. and Phys. Journal*, 1801, vi., p. 352; cf. *Edinburgh Med. and Surg. Journal*, 1813, ix., p. 279.

[5] This book is wholly unobtainable in the book market. A brief abstract of it appeared in the *Pharmac. Handelsblatt*, 1885, p. 23.

to new researches. About this time I met Goethe, at the instigation of Döbereiner, who had told the poet that by experiments upon cats I had found a method of ascertaining with certainty whether or not a poisoning with stramonium had occurred. Goethe had thereupon expressed the desire to meet the young chemist, and to see the demonstration of his discovery. When I crossed the market square in the afternoon, dressed with a borrowed frock coat and stove-pipe hat, and carrying the cat under my arm, I created a universal sensation. The boys who were loitering about the place, at the cry 'Doctor Poison!' suddenly came towards me and surrounded me. To those joking at my fantastic appearance I said, 'Let me in peace. I am attending to some important business. I am going to Goethe.' I was instantly released. Coming to Goethe's house, I was led into the reception-room, and soon stood before the poet. His lofty, handsome, and powerful presence made such an overwhelming impression upon me, that, all in a tremble, I handed him the cat, as if I wanted thus to defend myself. 'Ah! So,' Goethe said, 'that's what is going to be the future terror of the poison-mixers. Just let me look.' I then turned the cat's head so that the light struck both eyes simultaneously, and the difference between the eyes could be readily seen. Goethe was greatly surprised. Alongside of the small slit in one eye, the round, great opening in the other presented a very striking difference. In consequence of a somewhat large dose, the entire iris had almost become invisible, thus enhancing this singular aspect. 'How did you obtain this effect?' asked Goethe. 'With hyoscyamus, your excellency,' I answered. 'I have placed the unmixed juice of the pounded herb in the eye, therefore the action is so strong.' 'Döbereiner told me,' said Goethe, 'that both belladonna and stramonium act alike, and that you have ascertained that the active toxic principle is contained in the plant in all of its parts, from the root to the blossom, fruit, and seed. How is it with other plants, especially those of an affiliated relation?' 'A friend of mine, Dr. Carl Heise, induced by the peculiar action of the stated plants, has shown in an elaborate work that only the plants of the three orders mentioned above affect the pupils in a mydriatic manner. He has tried the action of innumerable other plants on the eye, and found them all to be inert save a few which produced the reverse of mydriasis, viz., a contraction of the pupil, such as aconitum.' 'Well,' Goethe said, 'there is a chance to discover the proper antidote for the toxic action of belladonna. Try this, and apply both antago-

nistic plants either simultaneously or one after another to the eyes of a cat. Observe the result. The matter is not without difficulties, but you will overcome these. But now, pray tell me, how you came to this peculiar kind of organic chemistry?'" Runge related: "In 1810 I was—a pastor's son, from the country near Hamburg—sent to Lübeck, and placed in the Rathsapotheke as an apprentice. It was a warlike time, and Napoleon prepared his invasion of Russia. All men able to carry arms were mustered out, and, on account of the universal unwillingness to serve under the tyrant, it was a matter of difficulty to find a substitute. Through recommendation of my uncle, I had received admission into several aristocratic families, and the son of one of them became a friend of mine. One evening he came to the drug store in great commotion, and told me his trouble, that the day after to-morrow he had to present himself for service, and that, being without physical defect, he probably would be taken. 'I would like to mutilate my hand,' he sighed, 'in order not to go into this ignominious war.' 'That is not necessary,' I said. 'Confide in me. I believe to be able to mutilate you for a short time with impunity. They will have to exempt you from service.' 'What are you going to do with me?' 'I will make you blind for twenty-four hours.' 'How are you going to do that?' 'Listen to me. About eight weeks ago I had to prepare a medicine, according to a doctor's prescription, in which a decoction of the juice of hyoscyamus was to be dissolved in water. Preparing the medicine in a mortar, a drop accidentally got into my eye. I experienced no pain, and did not observe any alteration until sensations of light flashes caused me to go to the looking-glass. How great was my astonishment when I saw the change that had taken place in my eye. The iris had almost wholly disappeared, and the eye looked precisely like that of a man suffering from amaurosis. The power of vision was also greatly weakened, as I noticed when I closed the unaffected eye. I don't know why this state of things did not raise any fears in me. After lasting a few days, the abnormal condition disappeared, and the power of vision returned, and also the normal proportions of the iris, so that both pupils appeared again of equal size. And behold! such an affection I will produce in both your eyes, and it would be very queer if you would not be discharged even after a superficial examination.' After making some easily-removed objections, my friend consented to this, at that time, very pardonable fraud, and thus saved his life, for

of all men that went from Lübeck to the war in Russia but few returned. His temporary blindness lasted thirty-six hours, passed away painlessly, without leaving behind any deleterious results."

Thus far goes the report of Runge, from which we can distinctly see that he obtained the knowledge of the mydriatic action of the Solanaceæ by the same accident as Daries derived his knowledge. Runge is consequently the seventh discoverer of this action. He tried even to practically utilize his discovery at once; for he recommended in his dissertation ('De Novo Methodo Veneficium Dijudicandi,' Jenæ, 1819) in a case of suspected atropine intoxication to place a drop of the urine of the poisoned person into the eye of a cat. The word atropine does not seem to have been known to Runge, for the solanaceæ alkaloid, isolated approximately by him, he calls koromegyn (Greek, magnifier of pupil). This alkaloid was isolated in 1830 properly by the apothecary Mein,[1] of Neustadt-Göders, and independently of him in 1832 by Geiger and Hesse,[2] while Liebig,[3] determined its chemical formula. The solution of the pure sulphate of atropine, instead of the extract of belladonna, was at once used by Geiger[4] and Hesse for the purpose of dilating the pupil. The named chemists succeeded soon[5] after also in isolating hyoscyamine, the active principle of hyoscyamus. They showed that this alkaloid, like atropine, had a distinctly mydriatic action even in a dilution of 1 to 1000.

In the majority of books treating of these historical facts, such as in Hirsch's 'History of Ophthalmology,' and in Hirsch's 'Latest Discoveries of Materia Medica,' Heidelberg and Leipzig, 1843, vol. ii., p. 160, we find the statement that the complete isolation of atropine and hyoscyamine occurred in the first half of the second decade of this century, and was obtained by Brandes and Runge. This, however, is wholly untrue.[6] For all those cases referred only to purified extracts, but not to chemically pure alkaloids. After the mydriatic action of

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[1] 'Liebig's Annalen,' vol. vi., p. 67.

[2] *Ibid.*, vol. v., p. 38.

[3] *Ibid.*, vol. vi., 1833, p. 66.

[4] *Ibid.*, p. 68.

[5] *Ibid.*, vol. vii., 1833, p. 271.

[6] Equally erroneous is the statement that Reisinger ('Bayerische Annalen;' Abhandlungen aus dem Gebiete der Chirurgie, Sulzbach, 1827; also *Salzburger Med. Chir. Zeitung*, 1825, No. 14, p. 237, and No. 15, p. 253) in 1824 had used the pure alkaloids of Solanaceæ.

the Solanaceæ alkaloids was positively made out, and had become generally known, their physiological *modus operandi* had to be determined.

Ernst Heinrich, as early as 1821, stated in his famous paper, *De Motor Iridis* (p. 102), that belladonna paralyzes the nerves of the muscular sphincter iridis. This view was confirmed by the experiments of Biffi (1845), Cramer and Ruiter (1853), and is now held exclusively by all ophthalmologists. Nevertheless, this view is only partially correct, for the most recent students of pharmacology have demonstrated that we have to deal here only with a paralysis of the peripheral ends of the nervus oculo-motorius, while the nervus sympathicus supplying the musculus dilator remains absolutely unaffected.

Fraser, of Edinburgh, discovered in 1861 the only practically applicable medium of pupillary contraction, viz., physostigmine or the extract of Calabar bean. Pilocarpine, muscarine, and nicotine likewise contract the pupil, but this contraction is in intensity and extent far inferior to that produced by physostigmine, and is of little practical importance.—*Therap. Gazette*, July, 1886.

ANTIFEBRIN, A NEW ANTIPYRETIC.

By A. Cahn and P. Hepp.

The body to which this name has been given is a well-known chemical material, acetanilid or phenylacetamide with the formula $C_6H_5NHC_2H_3O$. It is a pure white, crystalline, odorless powder, with a slight burning sensation on the tongue, is almost insoluble in cold but more readily in hot water, abundantly soluble in alcohol and alcoholic fluids. It melts at 113° C. and boils unchanged at 292° C. It has neither acid nor basic properties, and is very resistent to most reagents.

By experiments on dogs and rabbits the authors convinced themselves that even in relatively high doses it produces no poisonous effects. The temperature of normal animals is not affected by it.

The clinical observations were made on twenty-four patients with fever, as follows: typhoid fever 8, erysipelas 5, acute rheumatism 2, pulmonary phthisis 4, abscess of the lung 1, fever in leucæmia 1,

pyæmic fever in consequence of cystitis and decubitus 1, septicæmia 1, creeping pneumonia 1.

The drug was given in individual doses of ·25 to 1 gram, stirred up in water, or in wafers, or mixed with wine. The maximum dose hitherto given has been 2 grams in 24 hours. The appropriate dose varies with the nature of the illness; but the authors lay down the rule that the dose required to produce the equivalent effect is about one quarter the corresponding dose of antipyrine. They also find that distinct apyrexia is easier attained by single large doses than by repeated smaller ones. They then give some examples of the action of antifebrin.

From these it is seen that its action is already marked at the end of one hour, reaches its maximum after about four hours, and is over in from three to ten hours, according to the dose given. The temperature is lowered for six to eight hours by a dose which can reduce high temperature to the normal or under. A reduction of the temperature to the normal was accompanied by reddening of the skin and a fair amount of sweating. Its re-ascent was not accompanied by shivering, though in some cases, as with antipyrin, the patients had a sensation of cold. The fall in temperature is accompanied by a considerable diminution in the pulse rate, and by an increase in tension. The digestive tract tolerates antifebrin well, there being neither vomiting or nausea, nor diarrhœa. In some instances, during the afebrile period, along with a quite unusual thirst a marked increaee of diuresis occurred. None of the patients had any complaint to make of the medicine. The only symptom which caused any anxiety was a notable cyanosis in the face and extremities of some of the patients, which set in with apyrexia, and reached different degrees, but disappeared without any unpleasant effect, so that the observers ceased to trouble about it. In some instances the patients went off into a quiet sleep during the afebrile period.

The recommendations of this antipyretic are, then, its efficiency in comparatively small doses, the absence of troublesome symptoms on the part of the stomach, the slight amount of transpiration, and lastly its cheapness. It may be obtained from Kalle & Co., purified, at 30 marks per kilogram. Experimenters are advised as to the necessity of using the purified material.

The authors, in conclusion, call attention to this being the first indifferent body which has been found to possess antipyretic properties,

previously discovered antipyretics being either phenols (carbolic acid, hydrochinon, resorcin, salicylic acid), or bases belonging to the chinolin series (chinoline, kairine, antipyrine, thalline, quinine).—*Med. Chronicle*, Sept.—*Centralbl. f. klin. Med.*, Aug. 14, 1886.

JABORINE.

By Hardy and Calmels.

Pure dry pilocarpine does not yield jaborine when heated at 100° for six hours, neither can this substance be obtained by the action of alcoholic iodides on argento-pilocarpidine. If, however, carefully dried pilocarpine is heated rapidly to 175°, kept at this temperature for about half an hour, and the product extracted with water made alkaline with baryta, and shaken with ether, the ether contains jaborine, and the aqueous solution contains pilocarpidine and jaboric acid. *Jaborine* separates from alcohol or ether in a brown mass, which changes to a brittle, resinous solid. It is insoluble in water, but dissolves readily in ether, and is also soluble in jaboric acid. From solutions of the hydrochloride it is thrown down by potash as a curdy precipitate, which readily agglomerates under warm water. When boiled with concentrated aqueous potash it is converted into pilocarpidine.

Jaborine hydrochloride is extremely soluble in water and alcohol. When boiled with excess of hydrochloric acid, it is converted into pilocarpidine hydrochloride. Solutions of jaborine are brown with a greenish fluorescence, which is not completely removed by animal charcoal. An alcoholic solution of free jaborine yields with a limited quantity of platinic chloride, a dirty-white, gelatinous precipitate of the composition $(C_{22}O_{32}N_4O_4)_2,PtCl_4$; with platinic chloride in excess, a yellowish-white precipitate of the composition $C_{22}H_{32}N_4O_4,PtCl_4$, and with auric chloride a precipitate of the composition $C_{22}H_{32}N_4O_4,2AuCl_3$. In presence of a slight excess of hydrochloric acid, platinic chloride, whether in excess or otherwise, precipitates the compound

$$C_{22}H_{32}N_4O_4,H_2PtCl_6.$$

Jaboric acid is separated from pilocarpidine by precipitating with excess of silver nitrate, which forms a curdy precipitate of the composition $C_{19}H_{24}N_3O_5Ag,AgNO_3$. Jaboric acid resembles jaborine in appearance, but is very soluble in water, and is not removed from its

aqueous solution by ether. With alkalis it forms gummy salts, which dissolve in water and alcohol, and are not decomposed by carbonic anhydride. With silver nitrate in limited quantity it forms the compound $C_{19}H_{24}N_3O_5Ag$, which is precipitated by alcohol in the form of a brown powder. Hot concentrated potash or boiling hydrochloric acid converts jaboric acid into pilocarpidine and β-pyridine-α-lactic acid. Alcoholic solutions of jaboric acid give with platinic chloride in limited quantity a viscous precipitate of the compound

$$(C_{19}H_{25}N_3O_5)_2,PtCl_4;$$

with platinic chloride in excess, a yellow precipitate of a hemiplatinochloride, $(C_{19}H_{25}N_3O_5)_2,PtCl_4 + 2C_{19}H_{25}N_3O_5,PtCl_4$. With auric chloride a diaurochloride, $C_{19}H_{25}N_3O_5,2AuCl_3$, is formed. The hydrochloride and nitrate of jaboric acid are viscous substances; an aqueous solution of the former gives a viscous precipitate of the composition $(C_{19}H_{25}N_3O_5)_2,H_2PtCl_6$, with a limited quantity of platinic chloride.

Jaborine and jaboric acid are products of the condensation of pilocarpine, this condensation taking place on the betaine nucleus, and may be thus represented (Py = pyridyl):—

$$NMe_3\begin{matrix}\text{—}CMePy\beta\cdot CO\cdot O\text{—}\\ \text{—}O\cdot CO\cdot CMePy\beta\text{—}\end{matrix}NMe_3.$$

Jaborine.

$$OH\cdot CMePy\beta\cdot CO\cdot O\cdot NMe_3\cdot CMePy\beta\cdot COOH.$$

Jaboric acid.

C. H. B.

—*Jour. Chem. Soc.*, September, 1886, p. 815; *Compt. rend*, cii.

PEPTONES.

By W. Kühne and R. H. Chittenden.

Ammonium sulphate precipitates from a solution all proteïds but peptones. Peptones can in this way be obtained free from albumoses, with which they have in previous researches always been mixed. It was therefore necessary to repeat many previous experiments concerning the composition and properties of peptones. Amphopeptone, the mixture of peptones obtained in gastric digestion, and antipeptone, from tryptic digestion, were thus examined. The result of digestion was acidified with acetic acid, saturated with ammonium sulphate, filtered, the filtrate evaporated to small bulk, and filtered from the crystals of the salt which separated; the

remainder of the salt was removed by aqueous baryta, and the last traces by barium carbonate; dilute sulphuric acid was added to remove the baryta, and the barium sulphate filtered off. From the filtrate the peptones were precipitated by alcohol, redissolved, and again precipitated by phosphotungstic acid, and dried. In the case of amphopeptone, the first analyses were invalidated by adherent pepsin, and a substance designated mucin-peptone, apparently derived from the mucous membrane of the stomach; it forms a sticky, elastic precipitate with alcohol, but was not further investigated. The error due to these admixtures was obviated by saturating concentrated artificial gastric juice with ammonium sulphate; this precipitates the mucin and pepsin; pepsin alone redissolves in dilute hydrochloric acid; this solution was used as a digestive fluid; from it no mucin-peptone was obtained. The remains of the pepsin were subsequently removed by the ammonium sulphate with the albumoses.

Antipeptone was prepared both from fibrin and by the pancreas being allowed to digest itself.

The following table gives some of the results obtained in the analyses of these substances. In each case the samples had been purified by means of phosphotungstic acid. I. Amphopeptone from fibrin; II. Antipeptone from fibrin; III. Antipeptone from the pancreas:—

	C.	H.	N.	S.	O.	Ash.
I.....	48·75	7·21	16·26	0·77	27·01	3·22
II.....	46·59	6·69	18·28	0.67	27·77	3·67
III.....	44·47	7·15	17·94	0·57	29·87	2·07

Contrasted with previous analyses, the numbers obtained show about 1 per cent. less carbon, 1 per cent. more nitrogen, and 0·3 to 0·4 per cent. less sulphur. The percentage of nitrogen is greater in antipeptone, especially in that obtained from the gland, than in amphopeptone.

The following are the chief properties of pure peptone: When dissolved in water, it hisses and froths in the same way that phosphoric anhydride does; heat is at the same time evolved. Its solution in water is brown, which prevents its lævorotary power from being estimated. Its taste is somewhat cheesy, but not unpleasant. The bitter taste of artificially digested food must therefore be due to some product not yet separated, native proteïds and albumoses being almost tasteless. Peptones are not precipitated by sodium chloride in acid

solutions, nor by ammonium sulphate; they are completely precipitated by tannin, potassio-mercuric iodide, phosphomolybdic acid, phosphotungstic acid, and picric acid. A 5 per cent. solution rendered faintly alkaline by soda has the following additional properties:—

Reagent.	Fibrin-antipeptone.	Fibrin-amphopeptone.
Acetic acid and ferrocyanide of potassium.	At first clear; later a trace of opalescence.	
Normal lead acetate.....	First drop nothing; more, well-marked opalescence.	Opalescence less marked.
Basic lead acetate	Dense opalescence.	Opalescence less dense.
Mercuric chloride.....	First drop nothing; more, dense opalescence.	Opalescence denser.
Copper sulphate (5 per cent).	At first clear; later, a feeble opalescence, disappearing with excess of reagent.	Nothing.
Platinic chloride (5 per cent).	Feeble opalescence with excess.	Nothing.
Chromic acid.....	Nothing.	Nothing.
Ferric chloride.....	Opalescence disappearing on small excess.	Nothing.
Ferric acetate and concentrated H_2SO_4.	Brown-red color.	Brown-red color.
Nitric acid.....	Yellow color.	Yellow color.
Boiling with concentrated HCl.	Color darkens a little.	Color darkens a little.
Millon's reagent.....	A white precipitate turning to a dirty yellow on heating.	A white precipitate turning to bright red on heating.
Buiret reaction.....	Well marked.	Well marked.

The most noteworthy difference in the above table is the behavior to Millon's reagent; antipeptone never forms leucine and tyrosine in pancreatic digestion, whilst amphopeptone, which contains hemipeptone, does; antipeptone, moreover, after being subjected to the action of trypsin, yields no products which are colored red or violet by bromine or chlorine water, as hemipeptone does. Moreover, when treated with sulphuric acid, antipeptone did not yield crystals of tyrosine; and no proof could be obtained of its presence by Hoffmann's nor by Piria's reaction. From antialbumid, similarly, no tyrosine could be obtained; whether this will prove to be a general

rule for the anti-group of digestion-products the authors intend to investigate.—*Jour. Chem. Soc.*, September, 1886, p. 819; *Zeitsch. Biol.*, xxii. 423.

INFLUENCE OF GLYCEROL, SUGAR, AND FAT ON THE SECRETION OF URIC ACID IN MAN.

By J. Horbaczewski and F. Kanera.

A series of experiments were conducted on one of the authors during a period of seventy days, when the daily rations and mode of living were the same, with the exception of periods during which varying daily amounts of glycerol, sugar, and fat respectively were taken in addition to the normal food. For full details of the quality and quantity of food consumed and detailed analyses of the excreta the original paper must be consulted. The general results were:—

When glycerol is taken with the daily food a marked increase in the amount of uric acid secreted takes place; this, however, is only the case when free glycerol is taken; if it is taken combined with the fatty acids as neutral fats, it exerts no influence on the formation of uric acid.

Cane-sugar, and probably other carbohydrates, exert no direct influence on the formation of uric acid; it causes, however, a marked decrease of the secreted uric acid, due to the "albumin-retarding" action of the carbohydrates and proportional to it. This lowered secretion only continues as long as cane-sugar is taken. With the stoppage of the sugar, the normal uric acid formation does not again take place, but the entire amount of acid which was not secreted in consequence of the sugar is first passed, and then the normal quantity begins.

The neutral fats have a similar influence on the formation of uric acid to that of carbohydrates, but the after effects are different. The decrease in the amount of acid is proportioned to the "albumin-retarding" action of the fat, but when the addition of fat to the diet is stopped, the secretion of uric acid returns at once to the normal amount.

Glycerol causes an increase in the amount of albumin formed in man, as it was known to do in the dog.

The authors consider that their results have an important bearing

on the question of suitable diet for persons suffering from certain diseases which cause too large a secretion of uric acid.—*Jour. Chem. Soc.*, September 1886; *Monatsh. Chem.*, vii., 105.

MINUTES OF THE PHILADELPHIA COLLEGE OF PHARMACY.

A stated meeting of the members of the Philadelphia College of Pharmacy was held September 27th, 1886, at 3.30 p. m. in the hall, Charles Bullock presiding; twenty-three members being present. The minute of the previous meeting was, as usual, read and adopted. The proceedings of the Board of Trustees at the September meeting, as also those of a special meeting of the Board to take action on the death of Dillwyn Parrish, were presented, and on motion approved.

The report of delegates to the American Pharmaceutical Association, held at Providence in September, was offered by the Chairman, Mr. Alonzo Robbins, and accepted. The following summary of that report presents subjects of interest. The committee appointed to consider suggestions embraced in the address of the President of the Association recommended, 1st.—"That the Association seek the aid of the American Medical Association for the purpose of inducing an adherence, in prescribing, to officinal medicines only, and that the various State Associations use similar effort to secure the same object with their respective State Medical bodies." 2d.—"That there be a revision of existing methods in the management of the Association with a view to securing improvement." 3rd.—"That the influence of the Association should be used to prevent further multiplication of colleges of pharmacy." Among the items of general business, the following may be noted. The report of the committee on unofficinal formulæ was ordered to be printed. A resolution on this subject was, however, offered by Mr. J. H. Redsecker, of Lebanon, Pa., to the effect that in addition to the present committee of five members from New York and Brooklyn there shall be one member appointed from each State Pharmaceutical Association, all of whom shall, together, constitute the future committee. Mr. Charles A. Tufts, of Dover, N. H., the Treasurer of the Association for many consecutive years, was elected to the Presidency for the term ensuing. Cincinnati, Ohio, and the first Monday in September of 1877, indicate the place and time for the next meeting.

The report of the committee on deceased members was made by Mr. Bullock and prefaced by some suitable remarks. The report consisted, in chief, of a memoir of the late Peter Williamson, which was by motion received and assigned to the committee on publication. Mr. Bullock read a letter from an honored member, Samuel F. Troth, addressed to his fellow-members of the College, having reference to the death of Dillwyn Parrish. At the suggestion of the President, the Secretary was directed to indite a reply to the letter of Mr. Troth. In this connection, a historical note of those associated with the origin and early history of the College was submitted and directed to be placed upon the minutes.

The chairman made allusion to the inauguration and operation of the work of the Committee on Apprentice Examination, and requested Mr. Wallace Procter to give a verbal resume of the result as far as attained. In response Mr. Procter gave a brief statement of the purpose and scope of this examination, and stated that the idea appeared to meet with pronounced approbation and encouragement, the committee believing that as the object becomes better understood it will grow into favor, not only with proprietors and preceptors, but with students and novitiates as well. The examination as instituted amounts practically to individual self-inquiry into that condition of educational attainment which especially fits the pharmacist for future study and practice. There were four successful candidates at the first examination, each of whom received the attest of the committee in a certificate.

The chairman informed the members of the sanction given by the Board of Trustees to Dr. John J. Reese to institute, under certain conditions, an auxiliary course of lectures on Toxicology.

On motion to go into an election of candidates for membership in the college, the name of Thos. H. Franklin, whose application had been favorably reported, was presented. To conduct the balloting, Mr. Gustavus Pile was appointed. Mr. Pile subsequently reported the unanimous election of Mr. Franklin.

The terms of four trustees (one terminating by death), as well as the term of the Committee on Deceased Members, expiring with this date, an election was ordered. Messrs. Ferguson and Ross were appointed to act as tellers, and nominations were called for. The tellers formally reported the election of the following gentlemen: As Trustees for three years, Alonzo Robbins, E. M. Boring, Howard B. French; as Trustee for the unexpired term of W. C. Bakes, deceased, Dr. Charles A. Weidemann; as Committee on Deceased Members, Chas. Bullock, Gustavus Pile, Wallace Procter.

Prof Maisch announced the death of a corresponding member of the College, Niccola Cavour Sinimberghi, a distinguished pharmacist of Rome, Italy.

Announcement was also made of the inauguration of the lecture courses of 1886–1887, with introductory by Professor Sadtler.

No other business being presented, a motion to adjourn prevailed.

WILLIAM B. THOMPSON, *Secretary.*

Thalline.—Mr. Mayrhofer, during an epidemic of enteric fever occurring in a Bavarian regiment, employed thalline in three different forms, namely, the sulphate, the tannate and the tartrate, and obtained highly satisfactory results from them all. He gave the drug according to Ehrlich's continuous system, the doses being generally 0·2 gram, repeated when the temperature rose. From 1·0 to 2·0 grams were given per diem. The total quantity required varied from 8 grams in mild cases to 26 grams in severe cases with relapses. After taking the medicine, a profuse perspiration occurred, which invariably appeared to improve the patient's condition. No unpleasant effects were ever observed. There were altogether eighty-eight cases, of which three (that is, 3·4 per cent.) died. It was not possible to say that one of the three preparations presented any marked differences in its action from the other two.—*Med. and Surg. Reporter*, Aug. 7, 1886.

MINUTES OF THE PHARMACEUTICAL MEETING.

PHILADELPHIA, October 19th, 1886.

Pursuant to notice the first of the series of pharmaceutical meetings was held this day; on motion of Professor Maisch, Mr. Wm. B. Webb was called to preside.

The reading of the minutes of the last meeting was, on motion, dispensed with.

The following works were reported as having been received since the last meeting: Vol. VII. of the Index of the library of the Surgeon-General's office from the Surgeon-General, U. S. A., and a copy of part II. of the Report of the Smithsonian Institution for the year 1884 from the Secretary of the Institution. A number of volumes of the Proceedings of the American Pharmaceutical Association, with fifteen bound volumes of the American Journal of Pharmacy, were presented by Mr. Andrew Blair. Four volumes of Cours Élémentaire de Chimie by Regnault; one volume Mineral Resources of the United States; one volume Barnard Proctor's Lectures on Pharmacy; a copy of Hare's Chemical Philosophy, and one of Hare's Chemistry, from the Actuary. A vote of thanks of the College was offered to the givers of the various works.

Mr. J. W. England read a paper upon *Solution of Magnesium Bromide*, which was referred to the Publication Committee. Mr. McIntyre thought it was a matter of gratulation that one of our General Hospitals should be willing to diffuse information about what is going on in their wards.

Professor Maisch alluded to the *squill* bulb which was exhibited to the pharmaceutical meeting last year; the bulb was presented to the College by Mr. G. I. McKelway, and while it was destitute of leaves, the flower stalk shot up and in three and a half weeks it attained a height of six and three-quarter feet, the raceme alone being twenty-seven inches in length. The allusion to the squill elicited a conversation upon its poisonous properties, and it was stated that although quite a number of papers have been written upon the subject, the active principles had not been fully isolated. Merck has described several principles, but has not published the process for preparing scillipicrin, scillitoxin and scillin. The physiological action of these principles has not been definitely settled.

Professor Maisch exhibited specimens of *benzoin* of remarkably fine quality, which was recovered about a year ago from the wreck of a Dutch East Indian Company's vessel lost in Table Bay about the year 1691. The cargo had remained there undisturbed till a party obtained license to raise whatever they could of the cargo. Among the goods recovered were some cases of benzoin which, on being offered to London dealers, was at first looked upon with suspicion, as its appearance was so different from that usually seen in commerce. Examination proving it to contain fully ninety-two per cent. of matter soluble in alcohol, and to be quite superior in regard to its benzoic acid strength, it was readily disposed of. Several of the cases were well preserved, with the marks and numbers plainly visible, giving the name of the drug, the net weight and the year 1691. The sample had been obtained from Mr. William Saunders, London, Canada.

Professor Remington introduced Mr. Michaels, of Brooklyn, N. Y., to the meeting, and he exhibited an apparatus for the accurate *division of powders* for prescription work. It consists of a hollow brass cone pierced at its apex, through which a solid rod passes, and has a bayonet joint by which it may be tightly fastened to the rod. A tube, accurately fitting into the cone, and provided with projecting blades corresponding to the number of powders to be made, is used for dividing. The base of the cone has a cover which fits tightly to it and on it a movable triangular plate is secured. When the apparatus is in use the powder is filled into the inverted cone; the tube armed with the blades is pushed into place on the central axis; the lid is put on the base of the cone and the whole apparatus is then inverted, thus throwing the divided powders upon the lid, each powder remaining in a partition formed by the projecting blades. The little movable triangular plate is turned to one side over the cover when the contents of one division is thrown out on the paper. This is repeated by partially rotating the cover till all the spaces have been emptied; by emptying the contents of two or more partitions upon one paper, it will be seen that a machine capable of giving twelve powders may be utilized for six, four or three powders as may be desired.

The exhibition of this apparatus gave rise to considerable discussion relative to the rapidity with which powders can be accurately dispensed in prescriptions.

There being no further business a motion to adjourn was carried.

T. S. WIEGAND, *Actuary.*

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Twenty-second Annual Report of the Alumni Association; with the exercises of the sixty-fifth commencement of the Philadelphia College of Pharmacy, for the year 1885–6. 8vo, pp. 204.

As usual, this report gives the proceedings at the various social meetings and the annual meeting of the Alumni Association, together with the addresses and lectures delivered on these occasions, and at the beginning of the annual course, and at the commencement of the College; with much other information of particular interest to the graduates and students of this institution. The volume may be obtained from the secretary, Wm. E. Krewson, Ph.G.

The Proceedings of the following State Pharmaceutical Associations have been received:

Georgia. 8vo, pp. 40. See June number, p. 317.

Louisiana. 8vo, pp. 54. See June number, p. 318.

Pennsylvania. 8vo, pp. 250. Appended and paged separately is the report of the Committee on Unofficinal Formulæ, pp. 54. A report of the meeting was published in our July number, p. 361.

Third Biennial Report of the Commissioners of Pharmacy for the State of Iowa; with regulations and abstract of State Pharmacy Register. August 15, 1885. 8vo, pp. 136.

Official Circulars of the Commission of Pharmacy of Iowa. Issued April 8 and May 28, 1886.

Fifth Annual Report of the Illinois Board of Pharmacy; with abstract of State Pharmacy Register. 8vo, pp. 184.

Sixth Annual Report of the State Board of Health, Lunacy and Charity, of Massachusetts. Supplement containing the report and papers on Public Health. Boston: 1886. 8vo, pp. 357.

This volume contains also the General Index to the Health Supplements, issued since 1879.

Commonwealth of Pennsylvania, State Board of Health. We acknowledge the receipt of a number of documents from the secretary, Benj. Lee, M.D., 1532 Pine street, Philadelphia. Among them: Report of Organization; Rules of the Board; Provisional Regulations relating to Slaughter Houses, etc.; Precautions against Cholera and against Small-pox; Model Ordinance for the Better Preservation of the Public Health in Cities and Boroughs, etc.

Report for the Year 1885–6, *Presented by the Board of Managers of the Observatory to the President and Fellows of Yale College.* 8vo, pp. 15.

Methods of Analysis of Commercial Fertilizers. Proceedings of the third annual convention of the Association of Official Agricultural Chemists, August 26 and 27, 1886. 8vo, pp. 59.

Issued by the Department of Agriculture, Division of Chemistry, as Bulletin No. 12.

The following reprints from medical journals have been received:

Impetigo Contagiosa. By E. J. Beall, M. D., Fort Worth, Tex. From *Texas Med. Jour.*, August.

Some Recent Experiences in Clinical Surgery. By Donald Maclean, M.D., Detroit. From Transactions Mich. State Med. Soc. for 1886.

Galvano-cautery in Diseases of the Prostate, Bladder and Urethra. By Rob. Newman, M.D., New York. From *Jour. Amer. Med. Assoc.*, August 28.

Is Electrolysis a Failure in the Treatment of Urethral Strictures? By Rob. Newman, M.D., New York. From *The Med. Record*, Sept. 25.